USDA United States Department of Agriculture

Forest Service

Tongass National Forest

R10-MB-417

June 2000

Luck Lake Timber Sales

Final Environmental Impact Statement and Record of Decision

United States Department of Agriculture

Forest Service

Alaska Region
Tongass National Forest

648 Mission Street
Ketchikan, Alaska 99901
Phone (907) 225-3101
Fax (907) 228-6215

File Code: 1950

Date: June 22, 2000

Dear Reader:

Enclosed is your copy of the Final Environmental Impact Statement (EIS) and Record of Decision (ROD) for the Luck Lake Timber Sales, Thorne Bay Ranger District, Tongass National Forest.

The ROD explains my decision to select Alternative 3 as modified, and the factors considered in reaching this decision. The effective date of implementation for the decision and the Notice of Rights of Appeal are also specified in the ROD.

Copies of the Final EIS and Record of Decision are available in all Forest Service offices (including district and supervisor's offices) on the Tongass National Forest. Additional copies may be obtained from the Thorne Bay Ranger District office, P.O. Box 19001, Thorne Bay, Alaska, 99919, or by calling (907) 828-3304.

I want to thank those of you who took the time to review and submit comments on the Draft Environmental Statement and those who participated in the Subsistence Hearings. I appreciate your interest in the management of the Tongass National Forest.

Sincerely,

Thomas Puchlerz

THOMAS PUCHLERZ
Forest Supervisor

Record of Decision

Record of Decision

Luck Lake Timber Sales

Introduction

This Record of Decision (ROD) documents my decision to select an alternative from the Luck Lake Timber Sale Environmental Impact Statement (EIS). This Decision includes the specific location and design of timber harvest units and roads, as well as protection requirements for harvesting timber. The timber harvest is intended to be sold in several sales of varying sizes. In addition, this Decision includes the implementation of road management objectives such as culvert replacement, maintenance and an access management plan. Whether or not to approve a non-significant Tongass Land and Resource Management Plan (Forest Plan) amendment adjusting the boundaries of three small old-growth reserves is also a part of this Decision.

Background

The purpose and need for this Project is to implement direction contained in the revised Forest Plan:

- Manage the timber resource for production of saw timber and other wood products from suitable timber lands made available for timber harvest, on an even-flow, long-term sustained yield basis and in an economically efficient manner.
- Seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber, and the market demand for the planning cycle.
- Provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska.
- Support a wide range of natural resource employment opportunities within Southeast Alaska's communities.

The alternatives and actions considered are possible approaches to meeting this purpose and need. The environmental analysis documented in the Final Environmental Impact Statement (EIS) for the Luck Lake Project was conducted under the guidelines of the National Environmental Policy Act (NEPA) process. The NEPA was designed to help insure that I make the most informed decision possible for this proposed Project. The Luck Lake Project is expected to provide approximately 12.9 million board feet (MMBF) of timber, under the guidance of the Forest Plan.

Activities in the Luck Lake Project Area take place on Timber Production and Modified Landscape Land-Use Designations (LUD's). Other LUD's in the Project Area include a Transportation/Utility LUD and two non-development LUD's: Old-Growth Habitat and Semi-remote Recreation. A comparison of the Forest Plan desired future condition for the Timber Production and Modified Landscape LUD's against the existing condition shows the opportunity to harvest suitable stands to meet Forest Plan objectives of providing saw timber and other wood products contributing to local and regional economies of Southeast Alaska.

Section 101 of the Tongass Timber Reform Act of 1990 (TTRA) directs the USDA Forest Service "... to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle." Section 101 of the TTRA specifies that Forest Service efforts to seek to meet market demand are subject to appropriations, National Forest Management Act requirements, and other applicable laws. Providing a timber supply from the Tongass for sustained local wood products industry employment and related economic and social benefits helps meet the Forest Plan objective of supporting a wide range of natural-resource employment opportunities within Southeast Alaska's communities.

Regional mills have demonstrated the capacity to process the logs, if a supply of timber is available. There is a projected need for the timber from this Project Area (see Final EIS, Appendix A), to provide for stability within fluctuating market demand. A substantial component of the economy of Southeast Alaska is dependent on the timber industry.

Public scoping began with publication of the Notice of Intent in the Federal Register on July 24, 1997. This ROD and the Final EIS disclose the environmental effects of the alternatives considered and document my decision to authorize the Project and associated activities.

In developing the Final EIS and this ROD, I recognize that less than complete knowledge exists about many relationships and conditions of wildlife, fish, forests, jobs, and communities. The ecology, inventory, and management of a large forest area is a complex and developing science. The biology of wildlife species prompts questions about population dynamics and habitat relationships. The interaction between resource supply, the economy, and communities is not an exact science.

The data and level of analysis used in the Final EIS were commensurate with the importance of the possible impacts (40 Code of Federal Regulations (CFR) 1502.15). When encountering a gap in information, the interdisciplinary team (IDT) took one of two approaches: (1) they collected the missing information or conducted the analysis necessary to identify important relationships, or (2) they concluded that, although the missing information would have added precision to estimates or better specified a relationship, the basic data and central relationships are sufficiently established in the respective sciences so that new information would be very unlikely to reverse or nullify understood relationships.

As such, information missing from the Final EIS was not determined to be essential for a reasoned choice among the alternatives.

Decision

This Record of Decision documents my decision to implement activities in the Luck Lake Project Area. My decision encompasses the following:

- the estimated acreage to be treated in this Project Area in multiple timber sales;
- the location and design of timber harvest units including reserve areas;
- the location and design of road systems;
- mitigation and monitoring requirements;
- whether there may be a significant restriction on subsistence use and if so, related findings and measures to minimize impacts on subsistence users;
- approval of a non-significant Forest Plan amendment adjusting the boundaries of three small old-growth reserves;
- Access Management Plan objectives, including restrictions for resource protection and a comprehensive road and culvert maintenance program based on road-condition surveys conducted in the Project Area.

I have decided to choose Alternative 3, as modified in this Record of Decision, as the Selected Alternative.

This decision meets the purpose and need for the Project, is consistent with the Forest Plan, responds to issues raised during scoping, analysis, public responses to the Draft EIS, and subsistence comments.

Specifically, I select Alternative 3 and I authorize the actions necessary to implement my decision. Furthermore, I modify Alternative 3, making the following unit and road management changes:

- Delete units 572-409, 572-410, and 572-420 from the Selected Alternative. Units 572-410 and 572 420 are within the Chum Creek watershed, Coffman Cove's water source. High deer use was noted in unit 572-409, unit 572-410 contains high-value deer winter range, and moderate wildlife use was noted in unit 572-420. In all three units, minimal harvest would be possible to maintain the required 30 percent average canopy closure.

- Delete all construction and reconstruction planned for Forest Development Road (FDR) 3030345. The reconstruction and construction planned for FDR 3030345 provided access to unit 572-420. This road lies within the Chum Creek watershed and the portion of the road planned for reconstruction parallels Chum Creek. Portions of the proposed construction would have crossed biologically significant wetlands.

- Defer harvest of units 581-423 and 581-444 until the exact location of any goshawk nest in the area can be determined, or it can be determined with relative certainty that there is not a nest in the vicinity. Depending on the location of the nest, these units could either be deleted from harvest, or a portion of one or both units could become available for harvest.

- Construct FDR's 3030210, 3030220, 3030360, and 3030362 to access units 572-412, 581-414, and 581-434. Use conventional harvest systems instead of helicopter systems to harvest these units. Reconstruct FDR 3030600-1 to access a helicopter landing for unit 572-425. Using roads to access these units or landings makes them more economical.

Description of Selected Alternative:

1. The Selected Alternative will harvest about 709 acres of commercial forest land (CFL) to meet the requirements of the Tongass National Forest timber-sale program. This specified harvest will provide approximately 12.9 MMBF of sawlog and utility volume. Design features of approved harvest units are described in detail on the Unit Data Cards in Appendix 2 of the ROD.

2. The Selected Alternative has deferred harvest on units 581-423 and 581-444 until the exact location of any goshawk nest in the area can be determined or it can be determined with relative certainty that there is not a nest in the vicinity.

3. The Selected Alternative includes the following silvicultural system: two-aged harvest with reserves. This is consistent with Forest Service Chief's policy to reduce the amount of clearcutting. The two-aged harvest with reserves prescriptions are intended to provide stand structural diversity, maintain riparian habitat, maintain scenic quality, and leave young, vigorously growing trees. In addition, these prescriptions will maintain an average of 30 percent canopy closure in all units, meeting marten and goshawk standards and guidelines. The impacts to residual trees will be minimized. The Unit Data Cards in Appendix 2 of the ROD provide specific direction for field layout to accomplish these objectives.

4. The Selected Alternative includes reconstruction of 6.3 miles of existing road, and construction of 4.7 miles of new road in order to access the specified timber harvest units. These numbers reflect the modification of Alternative 3 in the Selected Alternative. Appendix 3 of the ROD contains the Road Cards, with direction for the location of each road. The Road Cards list road segments and road management and access objectives for future management of the transportation system, including maintenance and closures. This ROD identifies mitigation measures authorized to reduce or eliminate adverse environmental effects of the timber harvest and road construction activities specified in the Selected Alternative.

5. The Selected Alternative implements the Access Management Plan identified in the Final EIS (Chapter 3, Transportation section). Motor vehicle access will be eliminated on all roads constructed in the Selected Alternative (4.7 miles). In addition, 22.8 miles of roads currently open will be closed and 28.2 miles of roads currently closed will remain closed. When fully implemented, 37.3 miles of roads will remain open to public uses. See the Luck Roads Existing Condition Map and Luck Roads Proposed Access Plan Maps (Luck Lake Final EIS, Chapter 2) for more information. Please note that these maps display all potential road construction for the Luck Lake Final EIS. Appendix 3 lists the roads to be constructed under the Selected Alternative.

6. Streams will receive buffers meeting or exceeding requirements specified by the Forest Plan process group (Forest Plan, page 4-53) standards and guidelines.

7. My decision includes a nonsignificant Forest Plan amendment to adjust the boundaries of three small old-growth habitat reserves in Value Comparison Units (VCU's) 581, 582, and 583. See Appendix 1 for more details. This decision reflects not only the recommendations of an interagency group of biologists from the Alaska Department of

Fish and Game, the U.S. Fish and Wildlife Service and the Forest Service, who reached consensus on boundary locations following field reviews, but also public involvement. Figure A1-1 identifies the original Forest Plan and amended reserve locations.

8. I have determined that the effects of the Selected Alternative on the subsistence use of these resources are minimal. The direct effects from the action alternatives in the Luck Lake Project Area do not present a significant possibility of a significant restriction of subsistence uses of deer, black bear, marten, wolf, otter, marine mammals, waterfowl, salmon, other finfish, shellfish, and other foods.

   The potential foreseeable and cumulative effects from implementing the Forest Plan through the entire rotation period, including the No-action Alternative, the Selected Alternative, and all action alternatives in the Project Area, do not present a significant possibility of a significant restriction of subsistence uses of bear, marten, wolf and other resources. The potential foreseeable and cumulative effects from implementing the Forest Plan through the entire rotation period, including the No-action Alternative, the Selected Alternative, and all action alternatives in the Project Area, <u>do</u> present a significant possibility of a significant restriction of subsistence uses of deer.

   I have determined that: (1) these actions are necessary, and consistent with sound management of public lands, (2) the Selected Alternative involves the minimum amount of public land necessary to accomplish its purpose, and (3) reasonable measures to minimize impacts on subsistence uses and resources have been adopted to the extent practicable while still meeting the purpose and need for this Project. In particular, the 200-year rotation allows for a longer metering out timber harvest that provides more opportunities to protect key deer winter range, the two-aged harvest prescriptions retain structure in units after harvest, the access management plan reduces road densities within the project area.

Reasons for Decision

1. In making my decision, I worked to assure consideration of all issues and to take into account the competing interests and values of the public. There were many divergent public, personal, and professional opinions expressed during this EIS process. The decision will probably not completely satisfy any one particular group or individual. However, I considered all views, and I believe the decision I have made is reasonable. The Selected Alternative provides a beneficial mix of resources for the public, within a framework of existing laws, regulations, policies, public needs and desires, and the capabilities of the land, while meeting the stated purpose and need for this Project.

2. My decision to implement this Selected Alternative conforms with the Forest Plan and sound National Forest management. I have considered the need to help provide a sustained level of timber supply to meet annual and Forest Plan planning cycle market demand, and to provide diverse opportunities for natural resource employment, consistent with multiple use and sustained yield of all renewable forest resources. Timber sales implemented through this Project will help meet Southeast Alaska timber supply needs.

3. In the Selected Alternative I have amended the Forest Plan to adjust the boundaries of the small old-growth reserve in Value Comparison Unit (VCU) 581 and the boundaries and location of the small old-growth habitat reserve

VCU's 582 and 583. This decision more adequately addresses concerns about the distribution and connectivity of deer winter range. The new boundary locations encompass the best non-fragmented habitat remaining in the VCU's. Relocating these small old-growth habitat reserve boundaries results in a reduction in the lands suitable for development by 537 acres. Additional information is contained in the Forest Plan Significance Analysis: Small Old-growth Habitat Reserve Adjustments in VCU's 581, 582, and 583 (Appendix 1).

4. The Selected Alternative harvests 12.9 MMBF of timber, which would contribute to meeting market demand for timber and provide opportunity for sales of different sizes.

5. The Selected Alternative will provide the highest economic return to the Federal government while meeting the previously mentioned resource objectives. The Selected Alternative provides an estimated net return of up to $254 per thousand board feet (MBF) as indicated by the high market value. The actual value of timber sold will be determined during the timber sale appraisal process. See the Timber and Silviculture section in Chapter 3 of the Final EIS for more information.

6. The Selected Alternative meets the visual quality objectives (VQO's) as specified from the priority travel routes and key viewsheds. All units in the Selected Alternative will retain an average canopy closure of at least 30 percent, resulting in little visual change noticeable from existing conditions to the casual visitor. Actual viewpoints used in the analysis for meeting the VQO's for each viewshed are specified in the planning record.

7. The Selected Alternative implements an Access Management Plan that resulted from an analysis of community needs, resource concerns, and potential impacts, which were identified through internal, interagency, and public input. For example, the Draft EIS proposed eliminating vehicle access on FDR 3030100 just before the Eagle Creek bridge. As a result of public comment requesting access to the east side of Eagle Creek, the Selected Alternative keeps this road open to just after the bridge. In another instance, public comments requested that FDR 3000328 be left open for community uses. The Luck Lake watershed analysis identified that the upper portion of this road is located in a high-risk sediment source area. The Selected Alternative responds to both objectives by keeping the first one mile of road open to public uses and placing the portion with high resource concerns in storage, eliminating vehicle access. The Transportation section in Chapter 3 of the Final EIS contains specific information on the Access Management Plan.

8. The Selected Alternative will close all newly constructed roads. The Access Management Plan identifies other existing roads that require restricted access to meet critical resource objectives, as well as roads kept open to meet community needs. This Plan was presented and verified at a number of public and agency meetings.

9. The Selected Alternative minimizes impacts in the Chum Creek watershed, Coffman Cove's water source. No roads will be constructed in this watershed and only a portion of unit 572-405 is within the watershed boundaries. Units 572-410 and 572-420 will not be harvested and FDR 3030435 will not be constructed. The existing portion of FDR 3030435 will be placed in storage, eliminating vehicle access. All three are within the Chum Creek watershed. The Forest Service provided the Coffman Cove City Council with information regarding all proposed activities within the Chum Creek watershed. The City Council approved the activities specified in the Selected Alternative.

10. The Selected Alternative utilizes helicopter yarding to accomplish the goals and objectives of resource protection as well as to help mitigate some watershed, wildlife, and visual resource concerns. Helicopter logging is scheduled for approximately 49 percent of the harvested acres within the Selected Alternative.

11. The Selected Alternative implements the Forest Plan American marten and goshawk standards and guidelines. Using two-aged harvest with some reserves, the alternative insures that all harvest units retain stand structure distributed across the units.

12. The Selected Alternative is responsive to the 200-year rotation and maintaining deer winter range. It expands and locates small old-growth reserves to incorporate more low-elevation productive old growth. It decommissions all roads (or portions of roads) within the small old-growth reserve boundaries. It does not harvest unit 572-410, which contains high-value deer winter range, nor does it harvest units 572-409 and 572-420 where moderate to high deer use was noted.

13. The Selected Alternative does not harvest timber or build roads within the high-risk sediment source area in the Luck Lake drainage, identified in the Luck Lake Project Area Watershed Analysis.

How Issues are Addressed

In the following summary, I detail how significant issues are addressed within the Selected Alternative.

Significant issues for the Luck Lake Project were identified through public and internal scoping. Similar issues were combined into one statement where appropriate. The following five issues were determined to be significant and within the scope of the project decision. These issues are addressed through the proposed action and alternatives. Six additional concerns were considered but determined not to be significant for the project decisions to be made; they are either already resolved in the Forest Plan, or their resolution falls outside the scope of the Luck Lake Project.

Issue 1: High Value Wildlife and Fish Habitats

The Forest Plan includes a forest-wide network of old-growth habitat reserves, and detailed standards and guidelines specific to individual species and important habitat types. The application of some of this direction, as well as the need for additional measures, is left to project-specific analysis. This issue relates to maintaining the value and function of key local wildlife and fish habitats that support subsistence and related resources, including high value deer winter range, old-growth habitat connectivity, and cumulative effects within the Luck Lake watershed due to the amount of previous harvest within that drainage and its high sports fish uses.

The major effect on wildlife habitats in all action alternatives is the reduction of old-growth forest habitat. Measures were taken in the Forest Plan to maintain population viability within this province by: 1) enlarging the size of the large and medium old-growth habitat reserves above minimum requirements; 2) locating the reserves to specifically provide for connectivity from north to south (from Karta Wilderness to Port Protection) and east to west (from the Clarence Strait shoreline to Honker Divide); and 3) adding specific standards and guidelines for goshawks and marten in this province to prevent further fragmentation and provide habitat structure.

Impacts to other habitats were reduced by the interdisciplinary design of units prior to alternative formulation. All action alternatives result in impacts consistent with the implementation of the Forest Plan standards and guidelines, including the reduction of open road densities within the Project Area. The Luck Lake Project is only able to affect open road densities for those areas of WAA's within the Luck Lake Project boundaries.

The Luck Lake Project and Watershed Analyses implement the recommendations applicable to project-level planning presented in the Forest Plan. Site-specific BMP's were selected to minimize the potential for impact to fish habitat. These site-specific BMP's are noted on the individual Unit Design and Road Cards in ROD Appendices 2 and 3. The Forest Plan Riparian Management Area (RMA) buffers are implemented on all Class I, II, and III streams in the Project Area.

The majority of very high mass-movement index (MMI) soils have been removed from the timber base. Most sites retained in the unit pool are small inclusions. These sites have been examined by a professional soil scientist as part of unit reconnaissance.

Highlights of the Selected Alternative include the following:

- It incorporates the Forest Plan viable-population strategy of small, medium, and large old-growth reserves.
- It adjusts the projects small old-growth reserves to include more high value deer winter range.
- It results in relatively few miles of new road construction, all of which is scheduled for closure.
- The application of 1,000-foot estuary and beach buffers, stream buffers, and reserve areas within unit boundaries to provide structure for goshawks and marten will also serve to mitigate effects on important wildlife and fish habitat.
- It reduces overall risk to fish habitat by minimizing harvest unit location and road construction near stream courses in high risk sub-basins.
- It avoids timber harvest on important Riparian Management Areas identified as part of the Watershed Analysis; this helps to protect riparian habitat and regulate streamflow.
- It avoids harvest in or near the high-risk sediment source area in the Luck Lake drainage, identified in the Watershed Analysis.

Issue 2: Timber Sale Economics

This issue relates to the economic viability of proposed timber sales, and the potential employment and revenues generated by the project.

All of the action alternatives would result in a positive economic return under a high-market scenario, or a deficit sale under a low market. The Selected Alternative produced the highest stumpage rate providing an estimated net return of $254 to -$78 per thousand board feet (MBF) as indicated by the range of high to low market values. The low market used for our analysis had the lowest wood values seen during the past 30 years. Actual returns from the harvest will be determined for each timber offering based on current market conditions as determined through the timber sale appraisal and subsequent bids for individual timber sales. No wood will be sold for less than minimum (base) rates. Conventional sales (harvested with a cable yarder or shovel) should yield higher values, whereas helicopter sales will be closer to minimum, or base, values. In poorer market conditions, sales with a large helicopter component may not sell. Alternatives 4 and 6 incurred the highest logging costs ($337 per MBF) and the lowest range of stumpage values estimated ($184 to -$148 per MBF).

The Luck Lake Project range of alternatives would harvest from 6.6 MMBF (Alternative 5) to 16.9 MMBF (Alternative 4 and 6). The Selected Alternative could provide 68 forest products jobs.

In weighing the relative merits of the alternatives related to this issue, I am very much aware that all of the comparisons are estimates and actual revenues, employment, and costs can vary widely in different market conditions. Even with this variability, however, I believe the comparisons made in the Final EIS provide a useful and meaningful way to compare alternatives to one another.

Highlights of the Selected Alternative include the following:

- It does the best job of balancing resource protection and timber supply, while still providing economically viable timber sales.
- It produces the highest estimated stumpage rate.
- It produces 12.9 MMBF of economically viable timber to help support the local forest products industry.

Issue 3: Timber Sale Size and Complexity

This issue relates to the ability of smaller companies to compete for timber sales in the Project Area. Higher volume sales, coupled with extensive road construction, may be beyond the means of smaller timber purchasers. Likewise, helicopter or large cable logging systems may also preclude all but the larger companies.

The Selected Alternative provides raw materials to support the local forest products industry.

Of the action alternatives, Alternative 5 harvests the least volume with helicopter logging systems (1.5 MMBF) and ranks third in the volume requiring "other" cable (generally long-span) logging systems (1.0 MMBF). It offers the most economic logging system opportunities in proportion to its total harvest volume, however this is partly offset by the need for more road construction than Alternative 2. Alternatives 4 and 6 have the highest harvest volume using running skyline, but also considerably more road construction. The Selected Alternative and Alternatives 4 and 6 have the higher numbers of individual sale opportunities (potentially divisible into 13, 18, and 18 sales), the smallest of which would be only about 40,000 board feet. The Selected Alternative and Alternative 2 have similar average sale sizes (0.99 MMBF), slightly higher than Alternatives 4, 5, and 6 . The Selected Alternative and Alternatives 4 and 6 have more flexibility to provide a greater number of very small sale offerings. As discussed under the previous issue, the Selected Alternative minimizes road construction and has the lowest average harvest cost of the action alternatives, whereas Alternatives 4 and 6 have the highest average cost. Although it has the goal of providing less costly small sales, Alternative 5 has fewer options with only 7 potential sales, the smallest of which would be 650,000 board feet. The Selected Alternative therefore presents the most opportunities for small, relatively economical sales.

Highlights of the Selected Alternative include the following:

- It produces 12.9 MMBF of economically viable timber to help support the local forest products industry.
- It results in approximately 68 forest products jobs.
- Funds received by the State of Alaska from the sale of timber on National Forest System lands (25 percent) will continue to contribute funding for local public schools and road maintenance.
- It provides the opportunity for multiple timber sales up to a maximum of 13.

- It provides opportunity to offer some small timber sales with little or no road construction or helicopter harvest, allowing small timber operators to compete more effectively.

Issue 4: New Road Construction

This issue relates to construction of roads into areas available for timber management but currently unroaded. Of particular concern is the Baird Peak area: whether or not any roads should be built there, and if any are built, their management after completion of timber harvest.

Due to modifications made in the Selected Alternative, Alternative 2 has the lowest amount of new road construction (3.9 miles) and the least total construction and reconstruction (7.5 miles). The Selected Alternative is higher in overall road miles (10.5) of which 4.2 miles are new construction. Alternative 5 proposes 4.3 miles of new road construction. Neither the Selected Alternative nor Alternative 5 build roads into the Baird Peak area. Alternatives 4 and 6, which have considerably more new road construction (12.3 miles) than the other alternatives, would also build 2.6 miles of road in the Baird Peak area. Alternative 2 builds 0.67 mile of road in that area.

Highlights of the Selected Alternative include the following:

- It balances new road construction with timber economics and access management.
- It avoids new road construction in the Baird Peak area within the Ratz inventoried roadless area.
- It closes all newly constructed roads.

Issue 5: Access Management

This issue relates to how all of the existing and proposed roads will be managed upon completion of timber harvesting, in particular, if they are to be left open or closed to public use. Access management considerations include resource needs, the cost of road maintenance, proximity to communities, and recreation and other uses desired by the public.

The potential long-term effects of the new road construction just discussed will be reduced through implementation of an access management plan for the Luck Lake Project Area. This plan differs by action alternative only to the extent that the alternatives build different amounts of new roads, and the plan will close all newly-constructed roads at the end of the project. The access management strategy is to address and reduce, through access restrictions, some of the currently existing effects on wildlife and wildlife habitats, fisheries, soils, and water quality, while leaving other roads open for public uses and future timber management. As the result of an evaluation of community needs, resource concerns, and potential impacts (identified through internal, interagency, and public input), the access management plan closes all newly constructed roads from the Luck Lake Project and another 22.8 miles of roads currently open. Another 28.2 miles of roads currently closed would remain so. When fully implemented, 37.3 miles of roads will remain open to public uses. Alternative 1 leaves all existing roads in their current condition and does not propose any new access restrictions.

Open Road Density

The open road density within the project area is currently 1.08 miles of open, driveable road per square mile of land (miles/mile^2). This would remain unchanged under Alternative 1. Implementing the access management plan proposed for Alternatives 2, 3, 4, 5, and 6 would decrease the open road density to 0.67 miles/mile^2.

Highlights of the Selected Alternative include the following:

- It closes all new construction roads at the end of the project.
- It reflects community input into important roads for subsistence use and firewood gathering.
- It reduces the open road densities to the level recommended by the Forest Plan.

Public Involvement

Public involvement has been instrumental in identifying issues, formulating alternatives, and influencing this decision. Public scoping and involvement activities for the Luck Lake Project Area are listed in Chapter 1 and Appendix B of the Final EIS.

Notice of Intent (NOI)

A Notice of Intent was published in the *Federal Register* on July 24, 1997, when it was decided that an EIS was to be completed for the Project.

Public Mailing

In August, 1997, a letter providing information and seeking public comment (scoping document) was mailed to approximately 408 individuals and groups that had previously shown interest in Forest Service projects in Southeast Alaska. The mailing included 12 Federal agencies, 15 State agencies and divisions, 34 Native and municipal offices, and 97 businesses and other organizations and groups, in addition to individual citizens. Approximately 40 responses to this initial mailing were received.

Local News Media

Announcements about the project were printed in the *Ketchikan Daily News* and *Island News*. A scoping document describing the project was placed in the August 9-10, 1997, weekend edition of the *Ketchikan Daily News* and in the August 11, 1997, edition of the *Island News.*

Public Meetings

Public meetings were held in Thorne Bay, Whale Pass, Coffman Cove, Naukati, and Klawock to provide information and discuss potential areas of concern and/or interest that should be addressed in the Luck Lake Project.

Availability of Draft EIS for Public Comment

Availability of the Draft EIS was announced in the *Federal Register* on March 19, 1999 and through notices in local papers. The deadline for public comment was May 3, 1999. Documents were also mailed to Federal and State agencies, Native and municipal offices, and others who requested them.

Subsistence Hearings

Subsistence hearings on the Draft EIS were held at the following locations:

Stikine Inn, Wrangell	April 8, 1999
City Hall, Coffman Cove	April 12, 1999
Community Hall, Whale Pass	April 13, 1999
Bay Chalet, Thorne Bay	April 14, 1999
KPC Cookhouse, Naukati	April 15, 1999
ANB Hall, Klawock	April 16, 1999

Open houses and public meetings to describe the analysis process and answer public questions were held in conjunction with the subsistence hearings. Dates, times, and locations were publicized in the local media and posted at various locations in each community. Transcribed notes of all subsistence testimony are included in Appendix B of Luck Lake Final EIS.

Access Management Proposal Meetings

Public meetings to discuss and solicit public comment on the updated access management proposal were held at the following locations:

Ted Ferry Civic Center, Ketchikan	September 29, 1999
City Hall, Coffman Cove	November 3, 1999
City Hall, Thorne Bay	November 4, 1999

Dates, times, and locations of these meetings were publicized in the local media.

Analysis and Incorporation of Public Comment

The IDT analyzed and incorporated public comments and subsistence testimony into the Final EIS. Sixteen agencies, organizations, and individuals submitted written comments on the Luck Lake Draft EIS. Public comments, along with the Forest Service's responses, are listed in Appendix B of Luck Lake Final EIS.

Availability of the Final EIS was announced in the *Federal Register* and through notices in the local media. Documents were also mailed to Federal and State agencies, Native and municipal offices, and others who provided comments on this project or requested them.

Coordination with Other Agencies

From the time scoping was initiated, meetings and site visits with interested State and Federal agencies have occurred. Issues were discussed and information was exchanged.

Coordination meetings were held with the State of Alaska including the Department of Governmental Coordination, the Department of Fish and Game, and the Department of Environmental Conservation. The Alaska Coastal Management Plan (ACMP) consistency review process was initiated upon publication of the Draft EIS through the offices of the Alaska Division of Governmental Coordination. The State of Alaska, Office of Governmental Coordination, has conducted a consistency review of the project and, subject to the incorporation of specifically agreed upon measures, concurs with the Forest Service that the project is consistent with the Coastal Zone Management Act.

An interagency team of biologists representing the Fish and Wildlife Service, Alaska Department of Fish and Game, and the Forest Service reviewed small old-growth reserves for location and function in the Project Area.

A Biological Assessment was prepared and sent to the U.S. Fish and Wildlife Service and to the National Marine Fisheries Service as part of the Section 7 consultation under the Endangered Species Act.

The Final EIS identifies the agencies who were informed of and/or involved in the planning process (see the Distribution List in Chapter 4 of the Final EIS). See also the discussion of subsistence in the section entitled "Findings Required by Law", later in this ROD.

Alternatives Considered for Detailed Study

The Council on Environmental Quality (CEQ) regulations (40 CFR 1502.10(e)) state that EIS's shall consider "alternatives including the proposed action". Alternative 4 reflects the Luck Lake project's proposed action, as identified on page 1-1 of the Final EIS. Five alternatives to the proposed action are also considered. Alternative 1 is the no-action alternative, under which the Project Area would have no timber harvest or road construction at this time, and would remain subject to natural changes only. Alternatives 2, 3, 5 and 6 represent different means of satisfying the purpose and need than the proposed action, by responding with different emphases to the significant issues discussed in Chapter 1. Foldout color maps of all alternatives considered in detail are provided at the end of Chapter 2. Larger-scale maps of the alternatives are contained in the project planning record.

Five alternatives for making timber available to the timber industry from the Luck Lake Project Area are considered in detail. Each alternative is consistent with the Forest Plan. This section provides a discussion of: (1) the emphasis or intent of each alternative; (2) various resource outputs associated with implementation. Alternatives are compared and summarized in Chapter 2 of the Final EIS.

Alternative 1 (No Action)

Emphasis

This alternative would not propose any new timber harvest from the Luck Lake Project Area at this time. It does not preclude timber harvest from other areas at this time, or from the Luck Lake Project Area at some time in the future. This alternative serves as a benchmark by which effects of the action alternatives can be measured. The three old-growth habitat reserves within the Project Area would remain in their current locations, as mapped in the Forest Plan. This alternative provides limited opportunities to implement the access management plan, which is beneficial to many resources. The CEQ regulations (40 CFR 1502.14d) require that a "No Action" alternative be analyzed in every EIS. This alternative represents the existing condition against which all other alternatives are compared. The Alternative 1 (Existing Condition) map shows the distribution of vegetation associated with no new timber harvest.

No timber harvest outputs are associated with this alternative. Management for visual quality, wildlife habitat, and semi-primitive recreation outputs would continue as it currently exists.

Alternative 2

Emphasis

The emphasis of this alternative is to move the Project Area toward the Forest Plan's desired future conditions by minimizing potential effects to areas of key wildlife and fish habitat not already covered by Forest Plan direction. Harvest and road construction in high value deer winter range and identified wildlife travel corridors is avoided or minimized. In the Luck Lake drainage, activities with potential to adversely affect downstream sport fish resources are avoided. All figures listed below are approximate.

Alternative 2 would harvest 461 acres of commercial forest land in 18 harvest units producing 7.9 million board feet (MMBF) of timber. New road construction totals 3.9 miles. Alternative 2 proposes harvest of 196 acres of high-volume productive old growth, and 282 acres of old-growth forest under 1,200 feet elevation. 79 acres of harvest are proposed on lands under 800 feet elevation, where key deer winter range (high volume, low elevation, south-facing slopes) is found. The average size of harvest units is 26 acres. In the Luck Lake drainage (VCU 581), 6.8 MMBF of timber harvest would occur on 359 acres. Alternative 2 could be divided into as many as 8 timber sales, with an average size of 0.99

MMBF. The smallest offering would be 144,000 board feet. Average harvest/construction costs would be $286 per thousand board feet. Of this alternative's total harvest, 4.1 MMBF use less expensive running skyline harvest systems. On average, Alternative 2 harvests 1.1 MMBF for every mile of new and reconstructed road.

About 0.7 mile of road would be constructed in the Baird Peak area. After harvest activities are completed, all new project roads would be closed under the Luck Lake Access Management Plan.

Alternative 3

Emphasis

The emphasis of this alternative is to move the Project Area toward the Forest Plan's desired future conditions by harvesting the most timber while minimizing new road construction. Units are included that can be: 1) helicopter-logged to existing or reconstructed roads, 2) cable-logged to existing roads, and 3) cable-logged to short or temporary new roads. All figures listed below are approximate.

The Alternative 3 will harvest 843 acres of commercial forest land in 25 harvest units producing 14.2 million board feet (MMBF) of timber. New road construction totals 2.3 miles.

The Alternative 3 proposes harvest of 529 acres of high-volume productive old growth, and approximately 541 acres of old-growth forest under 1,200 feet elevation. The average unit size is 34 acres. In the Luck Lake drainage (VCU 581), 10.9 MMBF of timber harvest would occur on 596 acres.

The Alternative 3 could be divided into as many as 15 timber sales, with an average size of 0.95 MMBF. The smallest offering would be 40,000 board feet. Average harvest/construction costs would be $252 per thousand board feet. Of this alternative's total harvest, 4.0 MMBF use less expensive running skyline harvest systems. On average, Alternative 3 harvests 2.0 MMBF for every mile of new and reconstructed road.

No roads would be constructed in the Baird Peak area. After harvest activities are completed, all new project roads would be closed under the Luck Lake Access Management Plan.

Alternative 4

Emphasis

The emphasis of this alternative, the project proposed action, is to move the Project Area toward the Forest Plan's desired future conditions by making available the most timber volume that is feasible to harvest at this time while meeting all Forest Plan direction. The emphasis is to maximize the contribution of the Luck Lake Project Area to the timber products industry, and industry-related employment and income. All figures listed below are approximate.

Alternative 4 would harvest 1,038 acres of commercial forest land in 39 harvest units producing 16.9 million board feet (MMBF) of timber. New road construction totals 12.3 miles.

Alternative 4 proposes harvest of 597 acres of high-volume productive old growth, and 668 acres of old-growth forest under 1,200 feet elevation. The average unit size is 27 acres. In the Luck Lake drainage (VCU 581), 11.1 MMBF of timber harvest would occur on 617 acres.

Alternative 4 could be divided into as many as 18 timber sales, with an average size of 0.94 MMBF. The smallest offering would be 42,000 board feet. Average harvest/construction costs would be $337 per thousand board feet. Of this alternative's total harvest, 6.8 MMBF

use less expensive running skyline harvest systems. On average, Alternative 4 harvests 0.8 MMBF for every mile of new and reconstructed road.

About 2.6 miles of road would be constructed in the Baird Peak area. After harvest activities are completed, all new project roads would be closed under the Luck Lake Access Management Plan.

Alternative 5

Emphasis

The emphasis of this alternative is to move the Project Area toward the Forest Plan's desired future conditions by providing economically efficient timber harvesting and maximize opportunities for less costly small sales. Harvest of low-volume or low-value units is limited, as are investments in road access. The selection of logging systems is based primarily on economics. All figures listed below are approximate.

Alternative 5 would harvest 426 acres of commercial forestland in 12 harvest units producing 6.6 million board feet (MMBF) of timber. New road construction totals 4.3 miles.

Alternative 5 proposes harvest of 201 acres of high-volume productive old growth, and 376 acres of old-growth forest under 1,200 feet elevation. The average unit size is 36 acres. In the Luck Lake drainage (VCU 581), 4.7 MMBF of timber harvest would occur on 263 acres.

Alternative 5 could be divided into as many as 7 timber sales, with an average size of 0.94 MMBF. The smallest offering would be 650,000 board feet. Average harvest/construction costs would be $302 per thousand board feet. Of this alternative's total harvest, 3.7 MMBF use less expensive running skyline harvest systems. On average, Alternative 5 harvests 0.8 MMBF for every mile of new and reconstructed road.

No roads would be constructed in the Baird Peak area. After harvest activities are completed, all new project roads would be closed under the Luck Lake Access Management Plan.

Alternative 6

Emphasis

The emphasis of this alternative is to move the Project Area toward the Forest Plan's desired future conditions by making available the most timber volume that is feasible to harvest at this time while meeting all Forest Plan direction. The emphasis is to maximize the contribution of the Luck Lake Project Area to the timber products industry, and industry-related employment and income. This alternative is identical to Alternative 4 with the exception that the old-growth habitat reserves located between Little Ratz Harbor and Coffman Cove do not cross the Transportation/Utility System corridor that connects Little Ratz and Coffman Cove. All figures listed below are approximate.

Alternative 6 would harvest 1,038 acres of commercial forestland in 39 harvest units producing 16.9 million board feet (MMBF) of timber. New road construction totals 12.3 miles.

Alternative 6 proposes harvest of 597 acres of high-volume productive old growth, and 668 acres of old-growth forest under 1,200 feet elevation. The average unit size is 27 acres. In the Luck Lake drainage (VCU 581), 11.1 MMBF of timber harvest would occur on 617 acres.

Alternative 6 could be divided into as many as 18 timber sales, with an average size of 0.94 MMBF. The smallest offering would be 42,000 board feet. Average harvest/construction costs would be $337 per thousand board feet. Of this alternative's total harvest, 6.8 MMBF use less expensive running skyline harvest systems. On average, Alternative 6 harvests 0.8 MMBF for every mile of new and reconstructed road.

About 2.6 miles of road would be constructed in the Baird Peak area. After harvest activities are completed, all new project roads would be closed under the Luck Lake Access Management Plan.

Environmentally Preferable Alternative

No single factor can be used to determine which alternative is environmentally preferable. Maintaining the basic productivity of the land and the quality of life-style of the local residents are vitally important.

Alternative 1, the No-Action Alternative, would cause the least environmental disturbance and is therefore the environmentally preferable alternative. This is based on the comparison of all the alternatives shown in the Table 2-1 of Chapter 2 in the Luck Lake Final EIS.

All alternatives considered in detail have varying levels of environmental effects depending upon the emphasis of the alternative. Alternative 2 would cause the least adverse environmental effects of the action alternatives. The Alternative 3 has significantly fewer effects for most resources than Alternatives 4 and 6 due to building fewer miles of road and crossing fewer large streams. The Alternative 3 also has significantly fewer effects than Alternatives 4 and 6 for areas identified with subsistence use and fisheries concerns. All action alternatives reduce long-term environmental impacts through the implementation of the Access Management Plan.

Planning Record

The planning record for this Project includes the Draft EIS, Final EIS, Forest Plan, Alaska Regional Guide, all material incorporated by reference, and all materials produced during the environmental analysis of this Project. The planning record is available for review at the Thorne Bay Ranger District.

Mitigation

Mitigation measures are prescribed to avoid, reduce, minimize, or eliminate the adverse effects of actions. These measures were applied in the development of the Project alternatives, including the Selected Alternative, and in the design of the harvest units and road corridors. The Mitigation Measures section of Chapter 2 of the Final EIS discusses the mitigation measures for all alternatives.

Mitigation measures applicable to the Selected Alternative include those contained in the standards and guidelines of the Forest Plan, Alaska Regional Guide, and applicable Forest Service Manuals and Handbooks. The ROD Appendices 2 and 3 include Unit Design and Road Cards that incorporate site-specific mitigation and are adopted as part of this decision and will be implemented. Measures to avoid or minimize adverse environmental effects of the Project have been incorporated into the Selected Alternative and are listed in Appendix 2, Table A2-1 and Appendix 3, Table A3-1.

Monitoring

A monitoring program is the process by which the Forest Service evaluates whether or not the resource management activities of the Final EIS have been implemented as specified and whether or not the steps identified for mitigating the environmental effects were effective. Three levels of monitoring are recognized: implementation, effectiveness, and validation. Implementation monitoring occurs at the Project level. Effectiveness monitoring is generally conducted on a Forest-wide basis, though some project specific effectiveness monitoring is occasionally conducted to address specific needs (see the Monitoring section of Chapter 2 in the Final EIS). Validation monitoring is conducted at the Regional or Forest-wide level.

One objective of this strategy is to conduct implementation and effectiveness monitoring of Forest Service BMP's and other Forest Plan standards and guidelines. The Tongass National Forest, in cooperation with other interested agencies, has developed a monitoring strategy and action plan to achieve this objective. Implementation monitoring in the Luck Lake Project Area will follow the guidelines outlined in this action plan. Standards and guidelines to be monitored at specific sites are determined through a review of unit/road cards, fish habitat reports, and other documentation.

Project specific monitoring requirements beyond those required by the Forest Plan monitoring plan, are specified at the end of Chapter 2 of the Final EIS. For each monitoring item, objectives, desired results, methods of measurement, and evaluations (or threshold and corrective action) are identified, along with identification of the responsible staff. Monitoring activities may reveal results that deviate from planned effects, in which case corrective actions may be prescribed.

Findings Required By Law

National Forest Management Act

The National Forest Management Act requires specific determinations in this Record of Decision including: consistency with the Forest Plan and the Alaska Regional Guide, a determination of clearcutting as the optimal method of harvesting, and specific authorizations of created openings over 100 acres in size.

Tongass Land Management Plan and Alaska Regional Guide

This decision is consistent with the Alaska Regional Guide and the revised Forest Plan. I have reviewed the management direction, standards and guidelines, and the schedule of activities for the VCU's included in the Selected Alternative. I find the Selected Alternative to be consistent with these elements. The activities authorized in this decision are consistent with the standards and guidelines and management prescriptions of the revised Forest Plan.

Clearcutting as the Optimal Method of Harvesting

No units will be harvested with traditional, even-aged clearcut systems as a result of this decision.

Created Openings Over 100 Acres in Size

No created openings will exceed 100 acres.

Tongass Timber Reform Act

Harvest units were designed with no less than 100-foot buffer zones for all Class I streams and Class II streams which flow directly into Class I streams as required in Section 103 of the TTRA. The actual widths of these buffers follow Forest Plan Riparian Standards and Guidelines that greatly exceed TTRA requirements.

Endangered Species Act

Actions authorized in the Selected Alternative are not anticipated to have a direct, indirect, or cumulative effect on any threatened or endangered species in the Luck Lake Project Area. A Biological Assessment is included in Project planning record. I have determined that this action will not have any adverse impacts on any threatened or endangered species.

Bald Eagle Protection Act

Management activities within 330 feet of an eagle nest site are restricted by a Interagency Agreement between the Forest Service and the U. S. Fish and Wildlife Service to facilitate compliance with the Bald Eagle Protection Act. The Selected Alternative includes no road construction within 330 feet of a known bald eagle nest.

Clean Water Act

The design of harvest units and roads for the Selected Alternative were guided by standards, guidelines, and direction contained in the revised Forest Plan, Alaska Regional Guide, and applicable Forest Service manuals and handbooks. The ROD Appendices 2 and 3, Unit Design and Road Cards, contain specific details on practices prescribed to prevent or reduce nonpoint sediment sources. Site-specific application and monitoring of BMP's is expected to comply with applicable State Water-Quality Standards Regulations. These regulations provide for variances from anti-degradation requirements and water-quality criteria. The harvest and road-building operators are responsible for compliance, including obtaining any variance required by the State, and will be monitored for compliance by the Forest Service.

A monitoring plan to detect and evaluate possible effects of bark accumulations, oil sheens, and surface runoff will be implemented as a part of permitting processes for log-transfer facilities (BMP 14.4, FSH 2509.22).

Essential Fish Habitat

The potential effects of the Luck Lake Timber Sales project on essential fish habitat have been evaluated. For specific information regarding essential fish habitat and the potential impacts refer to the Luck Lake Project Area Soil, Floodplain, Riparian, and Wetland Resources Report and Addendum, which evaluate landslide potential on streamcourses within the Project Area. Also, see the Luck Lake Project Area Watershed Analysis and cumulative effects for fisheries and water resources on potential impacts to essential fish habitat based on proposed harvest activities within the Luck Lake Project Area. Analysis completed in the cumulative effects sections for fisheries, soils, and water indicate no significant changes to Riparian Management Areas (RMA's) and floodplains due to proposed management activities.

In evaluating the potential effects on essential fish habitat the following factors were considered:

- Forest Plan standards and guidelines for process group riparian buffers have been applied in all instances on Class I, II, and III streams;
- the BMP's described in the unit and road cards for the Selected Alternative provide assurance of water quality and aquatic habitat protection for all freshwater streams and marine waters affected by the project;
- the exclusion of harvest on slopes greater than 72 percent, unless field review by professional soil scientists, indicates harvest of these slopes can be accomplished with no damage to other resources; and
- road construction in the Selected Alternative includes no new road crossings of Class I or II streams .

Based on the above factors, the risk of measurable impact on essential fish habitat has been minimized in the Project Area. I have determined that the Selected Alternative is unlikely to adversely affect essential fish habitat.

National Historic Preservation Act

Cultural resource surveys of various intensities have been conducted in the Project Area. The State Historical Preservation Officer has been consulted, and the provisions of 36 CFR part 800 are being complied with. Forest Service timber-sale contracts contain enforceable measures for protecting any undiscovered cultural resource that might be encountered during sale operations. I have determined, consistent with the Forest Service direction on cultural resources, that there will be no significant effects on cultural resources. We have completed the Section 106 review for all timber harvest related activities displayed in the Final EIS. This includes roads and units in all alternatives.

Federal Cave Resource Protection Act of 1988

The actions in the Selected Alternative will not have a direct, indirect, or cumulative effect on any significant cave. There are few occurrences of carbonate rock and associated cave resources within the Project Area. Field reconnaissance identified areas of concern and I have applied Forest Plan standards and guidelines on these areas.

ANILCA Section 810

Subsistence Evaluation and Findings

A subsistence evaluation was conducted for the six alternatives considered in detail for the Luck Lake Final EIS, in accordance with Alaska National Interest Lands Conservation Act (ANILCA) Section 810. Open houses followed by ANILCA Section 810 hearings were held in Coffman Cove, Wrangell, Klawock, Naukati, Thorne Bay, and Whale Pass.

The evaluation of comments from the public, subsistence hearing testimony, and additional analysis indicates that the potential foreseeable effects from the alternatives in the Luck Lake Project Area do not indicate a significant possibility of a significant restriction of subsistence uses for bear, furbearers, marine mammals, waterfowl, salmon, other finfish, shellfish, and other foods such as berries and roots. Analysis does indicate that all alternatives including the no-action alternative present a significant possibility of a significant restriction of subsistence uses for deer.

Implementation of the Selected Alternative does present a significant possibility of a significant restriction on subsistence use of Sitka black-tailed deer in the Project Area for the community of Coffman Cove. The effect of the Selected Alternative on the subsistence use of deer is minimal; most effects are associated with foreseeable cumulative impacts from past harvest. See the Subsistence section in Chapter 3 of the Final EIS.

The Final EIS describes the mitigation measures that will be implemented as a part of each alternative. Most of the mitigation measures are designed to maintain fish and wildlife habitat productivity at the highest level possible, while still producing a supply of timber. Measures were taken in the Forest Plan to maintain population viability within this province by: 1) the size of the large and medium old-growth habitat reserves were enlarged above minimum requirements; 2) the reserves were specifically located to provide for connectivity from north to south (from Port Protection to Karta Wilderness) and east to west (from (Clarence Strait shoreline to Honker Divide); and 3) specific standards and guidelines were added for goshawks and marten in this province to prevent further fragmentation and provide habitat structure.

In addition, I have determined that reasonable measures to minimize impacts on subsistence have been adopted to the maximum extent practicable while still meeting the purpose and need for this Project.

Consumers, Civil Rights, Minorities, and Women

No negative impacts to the civil rights of individuals or groups, including minorities and women, are anticipated to be associated with this Project. Additional information can be found in the Forest Plan Final EIS Chapter 3 and Appendix H.

Executive Orders

Executive Order 11988

Executive Order 11988 directs Federal agencies to take action to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains. The numerous streams in the Project Area make it impossible to avoid all floodplains during timber harvest and road construction. The design of the proposed developments and the application of BMP's combine to minimize adverse impacts on floodplains.

Executive Order 11990

Executive Order 11990 requires Federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands. The Selected Alternative avoids most identified wetlands; however, many small wetlands or muskegs occur as inclusions within forested areas. These areas may be altered by timber harvest or road construction. Techniques and practices required by the Forest Service serve to maintain the wetland attributes including values and functions. It is estimated there will be only minimal loss of wetlands with any of the alternatives. Soil moisture regimes and vegetation on some wetlands may be altered in some cases; however, these altered acres would still be classified as wetlands and function as wetlands in the ecosystem.

Executive Order 12898

Executive Order 12898 directs Federal agencies to identify and address the issue of environmental justice, i.e., human health and environmental effects of agency programs that disproportionately impact minority and low-income populations. The Executive Order specifically directs agencies to consider patterns of subsistence hunting and fishing when an agency action may affect fish or wildlife. The issue of environmental justice has been addressed through the Luck Lake environmental analysis by identifying low income or Native communities that may be affected by the proposed action; by ensuring that scoping and public involvement activities reach those communities; by evaluating the effects of the proposed action on such communities; and by documenting the analysis. Detailed discussion of potential project effects on communities and subsistence is presented in the Socioeconomic Environment and Subsistence sections of Chapter 3.

Open houses, followed by ANILCA Section 810 hearings, were held in Coffman Cove, Wrangell, Klawock, Naukati, Thorne Bay, and Whale Pass.

The communities of Klawock and Wrangell have significant Native populations and have been evaluated for disproportionate or adverse environmental effects of the proposed action. Outreach in these communities in the form of subsistence hearings were undertaken to identify specific issues concerning the Luck Lake Project. Neither subsistence hearing resulted in concerns regarding the Luck Lake Project.

Comments on the Forest Plan Revised Supplemental Draft EIS from the Coffman Cove community expressed desires to protect subsistence, that both subsistence and timber harvesting are important, and concerns about employment (Forest Plan Final EIS, page 3-604). Implementation of Forest Plan Final EIS Alternatives 2, 3, 4, 5,and 6 were predicted by the Socioeconomic Panel to most likely have generally positive or neutral effects on Coffman Cove. Although not rated by the panel, the effects of Forest Plan Selected Alternative 11, would be similar to Alternative 3 (Forest Plan Final EIS, page 3-606).

The Luck Lake Project will not have a disproportionate effect on Native or low income communities, based on: 1) the Socioeconomic Panel's evaluation of the Forest Plan alternatives effect on the community of Coffman Cove, 2) the Forest Plan ROD's determination that Selected Alternative 11 would be similar in its effects to the rated

alternatives, 3) the Luck Lake Project falls within the scope of the Forest Plan, and 3) community outreach efforts conducted to ascertain Project Area issues, .

Executive Order 12962
Executive Order 12962 requires Federal agencies to evaluate the effects of proposed activities on aquatic systems and recreational fisheries. The Selected Alternative attempts to minimize the effects upon aquatic systems through Project design, watershed analysis, application of Forest Plan standards and guidelines, BMP's, and site-specific mitigation measures. Recreational fishing opportunities will remain essentially the same because aquatic habitats are protected through implementation of BMP's and riparian buffers.

Coastal Zone Management Act

The Coastal Zone Management Act of 1972, as amended, while specifically excluding Federal lands from the coastal zone, requires that a Federal agency's activities be consistent with the enforceable policies of a State's coastal management program to the maximum extent practicable when that agency's activities affect the coastal zone.

The Alaska Coastal Management Program incorporated the Alaska Forest Resources and Practices Act (Forest Practices Act) as the applied standards and guidelines for timber harvesting and processing. The Forest Service standards and guidelines, BMP's, and mitigation measures described in the Luck Lake Final EIS meet or exceed the level of protection provided by the enforceable policies of the State Forest Practices Act.

The State of Alaska, Office of Governmental Coordination, has conducted a consistency review of the project and, subject to the incorporation of specifically agreed upon measures, concurs with the Forest Service that the project is consistent with the Coastal Zone Management Act.

Based on the analysis in the Final EIS, review of the Alaska Forest Practices Act, and comments from State agencies on the Draft EIS, I have determined that the Selected Alternative is consistent to the maximum extent practicable with the enforceable policies of the Alaska Coastal Management Program.

Federal and State Permits

Federal and State permits necessary to implement the authorized activities are listed at the end of Chapter 1 in the Final EIS.

Implementation Process

Implementation of this decision may occur no sooner than 50 days following publication of the legal notice of the decision in the *Ketchikan Daily News*, published in Ketchikan, Alaska.

This Project will be implemented in accordance with Forest Service Manual (FSM) and Handbook (FSH) direction for Timber Sale Project Implementation in FSM 2431.3 and FSH 2409.24. This direction provides a bridge between project planning and implementation and will ensure execution of the actions, environmental standards, and mitigations approved by this decision, and compliance with the TTRA and other laws.

Implementation of all activities authorized by this ROD will be monitored to ensure that they are carried out as planned and described in the Final EIS and ROD Appendices 2 and 3, Unit Design and Road Cards, unless modified consistent with direction in the FSM 2432.3 and FSH 2409.18.

Unit Design and Road Cards are contained in ROD Appendices 2 and 3. These cards are an integral part of this decision because they document the specific resource concerns, management objectives, and mitigation measures to govern the layout of the harvest units and construction of roads. These cards will be used during the implementation process to assure that all aspects of the Project are implemented within applicable standards and guidelines and that resource impacts will not be greater than those described in the Final EIS. Similar cards will be used to document any changes to the planned layout, as the actual layout and harvest of the units occurs with project implementation. The implementation record for this Project will display:

- each harvest unit, transportation facility, and other Project components as actually implemented,
- any proposed changes to the design, location, standards, and guidelines, or other mitigation measures for the Project, and
- the decisions on the proposed changes.

Process for Change During Implementation

Proposed changes to the authorized Project actions will be subject to the requirements of the NEPA and other laws concerning such changes.

In determining whether and what kind of further NEPA action is required, the Forest Supervisor will consider the criteria in 40 CFR 1502.9(c) and FSH 1909.15, sec. 18, for whether to supplement an existing EIS. In particular, whether the proposed change is a substantial change to the intent of the Selected Alternative as planned and already approved, and whether the change is relevant to environmental concerns. Connected or interrelated proposed changes regarding particular areas or specific activities will be considered together in making this determination. Cumulative impacts will be considered.

The intent of field verification is to confirm inventory data and to determine the feasibility and general design and location of a unit or road, not to locate the final boundaries or road locations. Minor changes are expected during implementation to better meet on-site resource management and protection objectives. Minor adjustments to unit boundaries are also likely during final layout for the purpose of improving logging system efficiency. This will usually entail adjusting the boundary to coincide with logical logging setting boundaries. Many of these minor changes will not present sufficient potential impacts to require any specific documentation or action to comply with applicable laws. Some minor changes may still require appropriate analysis and documentation to comply with FSH 1909.15, sec. 18.

Right To Appeal

This decision is subject to administrative appeal. Organizations or members of the general public may appeal this decision according to Title 36 CFR Part 215. The appeal must be filed within 45 days of the date that legal notification of this decision is published in the *Ketchikan Daily News*, the official newspaper of record. The Notice of Appeal must be filed with:

Regional Forester
Forest Service
U.S. Department of Agriculture
P.O. Box 21628
Juneau, Alaska 99802-1628

It is the responsibility of those who appeal a decision to provide the Regional Forester sufficient narrative evidence and argument to show why the decision by the Forest Supervisor should be changed or reversed. At a minimum, the written notice of appeal must:

1. State that the document is a Notice of Appeal filed pursuant to 36 CFR part 215;
2. List the name, address, and, if possible, a telephone number of appellant;
3. Identify the decision document by title and subject, date of the decision, and name and title of the Responsible Official;
4. Identify the specific change(s) in the decision that the appellant seeks or portion of the decision to which the appellant objects;
5. State how the Responsible Official's decision fails to consider comments previously provided, either before or during the comment period specified in 36 CFR 215.6 and, if applicable, how the appellant believes the decision violates law, regulation, or policy.

The first timber sale is planned to be made available in 2000.

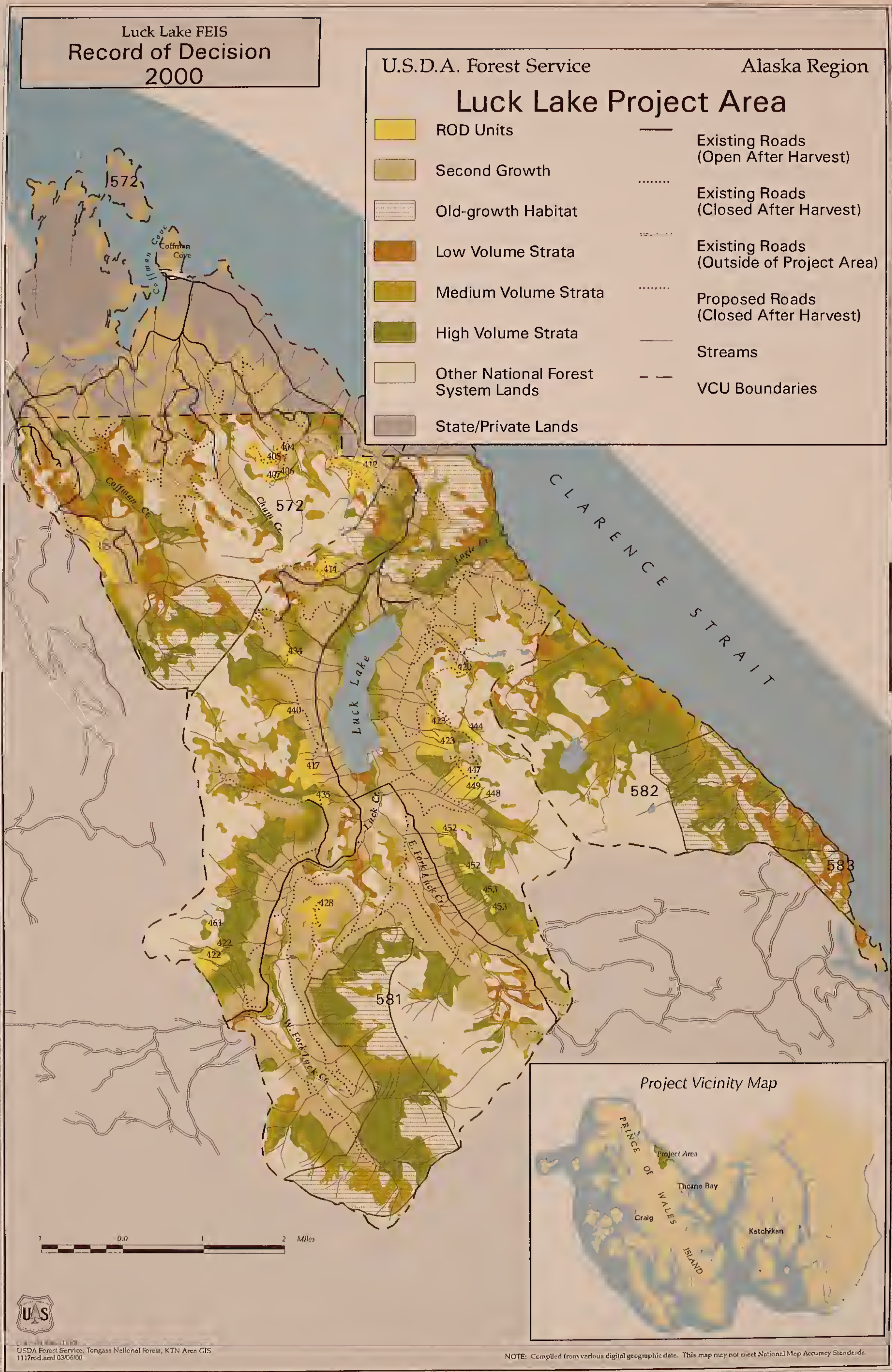
For additional information concerning the specific activities authorized with this decision contact the District Ranger, Thorne Bay Ranger District.

David Schmid, District Ranger
Thorne Bay Ranger District
PO Box 19001
Thorne Bay, Alaska 99901
(907) 828-3210

Thomas Puchlerz

THOMAS PUCHLERZ
Forest Supervisor
Tongass National Forest

6-27-00
Date


Luck Lake FEIS
Record of Decision
2000
U.S.D.A. Forest Service
Alaska Region
Luck Lake Project Area
ROD Units
Second Growth
Old-growth Habitat
Low Volume Strata
Medium Volume Strata
High Volume Strata
Other National Forest System Lands
State/Private Lands
Existing Roads (Open After Harvest)
Existing Roads (Closed After Harvest)
Existing Roads (Outside of Project Area)
Proposed Roads (Closed After Harvest)
Streams
VCU Boundaries
CLARENCE STRAIT
Coffman Cove
Coffman Cr.
Luck Lake
Luck Cr.
E. Fork Luck Cr.
W. Fork Luck Cr.
Eagle Cr.
572
581
582
583
404
405
406
407
412
414
417
420
422
423
428
434
435
440
444
447
448
449
452
453
461
Miles
Project Vicinity Map
PRINCE OF WALES ISLAND
Project Area
Thorne Bay
Craig
Ketchikan
USDA Forest Service, Tongass National Forest, KTN Area GIS
1117rod.aml 03/06/00
NOTE: Compiled from various digital geographic data. This map may not meet National Map Accuracy Standards.

Appendix 1

Forest Plan Significance Analysis:

Small Old-growth Habitat Reserve Adjustments in VCU's 581, 582, and 583

Appendix 1

Forest Plan Significance Analysis: Small Old-growth Habitat Reserve Adjustments in VCU's 581, 582, and 583

Based on the project level analysis process as described in the old-growth management prescriptions and Appendix K of the Tongass National Forest Land and Resource Management Plan of 1997 (Forest Plan), the small old-growth reserves located in Value Comparison Units (VCU's) 581, 582, and 583 in the Luck Lake Project Area have been adjusted to better meet size, location, and habitat composition criteria in these VCU's. The reserves in VCU's 581 and 583, as mapped in the Forest Plan, did not meet the productive old-growth acreage requirement for small reserves, and the reserves in VCU's 582 and 583 did not meet the overall size requirements based on the criteria specified in Appendix K of the Forest Plan.

The Secretary of Agriculture's implementing regulation indicates the determination of significance is to be "...based on an analysis of the objectives, guidelines and other contents of the forest plan" (36 Code of Federal Regulation (CFR) 219.10(f)). The Forest Service has issued guidance for determining what constitutes a "significant amendment" under the National Forest Management Act. This guidance, in the Forest Service Handbook (FSH) 1909.12 - Chapter 5.32, identifies four factors to be used in determining whether a proposed change to the Forest Plan is significant or not significant. These four factors are: (1) timing, (2) location and size, (3) goals, objectives, and outputs, and (4) management prescriptions.

1 Appendix

Timing

The Forest Plan revision was completed in 1997 and the Decision was modified in 1999. The old-growth habitat management prescription in the Forest Plan indicates the small mapped reserves have received differing levels of field verification and integration of site-specific information in their design. During project level environmental analysis, for project areas that include or are adjacent to mapped old-growth habitat reserves, the size, spacing, and habitat composition of mapped reserves may be further evaluated.

Location and Size

The boundaries of the reserve in VCU 581, and the boundaries and location of the reserve in VCU's 582 and 583 have been adjusted (see Figure A1-1). The sizes of the adjusted old-growth reserves in VCU's 581, 582, and 583 are approximately 3,679 acres, 1,243 acres, and 975 acres, of which 523 acres, 408 acres, and 95 acres were classified in Forest Plan calculations as suitable and available for timber production.

Goals, Objectives, and Outputs

Goals

The Forest Plan goal for biodiversity is to maintain healthy forest ecosystems; maintain a mix of habitats at different spatial scales (i.e. site, watershed, island, province and Forest) capable of supporting the full range of naturally occurring flora, fauna, and ecological processes native to Southeast Alaska. The adjustments to the small old-growth reserves are consistent with the goals of the Forest Plan.

Objectives

The Forest Plan objectives include: (1) to maintain a Forest-wide system of old-growth forest habitat (includes reserves, nondevelopment land use designations (LUD's), and beach, estuary and riparian corridors) to sustain old-growth associated species and resources and (2) to ensure that the reserve system meets the minimum size, spacing and composition criteria described in Appendix K of the Forest Plan. The adjustments to these small old-growth reserves were specifically designed to meet the Forest Plan objectives.

Outputs

Adjustments to the small old-growth reserves in VCU's 581, 582, and 583 will have only minor effects on Forest Plan outputs.

Management Prescriptions

The small old-growth reserve has been adjusted as noted in the Forest Plan Record of Decision and in accordance with the Old-Growth LUD management prescription. None of the standards and guidelines associated with the management prescriptions have been changed.

Cumulative Changes

The Luck Lake Timber Sales is one of nine National Environmental Policy Act (NEPA) decisions, as of March 2000, to make non-significant amendments to the Forest Plan by modifying LUD boundaries. The Niblack Environmental Assessment (EA) changed a Wild River nondevelopment LUD to Old-Growth Habitat and Timber Management LUD's. The rest of the amendments involved enlargement or reduction of Old-Growth Habitat LUD's, usually exchanging acres with one of the resource development LUD's in order to more effectively meet Forest Plan objectives. Usually, wherever an Old-Growth Habitat LUD expanded, it caused a corresponding reduction of acres suitable for timber harvest. Likewise, an Old-Growth Habitat LUD size reduction usually meant an increase in suitable acres.

While the LUD changes within each project decision constituted non-significant Forest Plan amendment, Table A1-1 displays the accumulated effect on suitable acres for all projects. For each project, the table displays suitable acres that were changed from a nondevelopment LUD to a resource development LUD, or from a development LUD to Old-Growth Habitat. The net change in suitable acres represents less than one percent of the suitable land base.

Table A1-1
Effects of Forest Plan Amendments on Acres Suitable for Timber Harvest as of May 2000

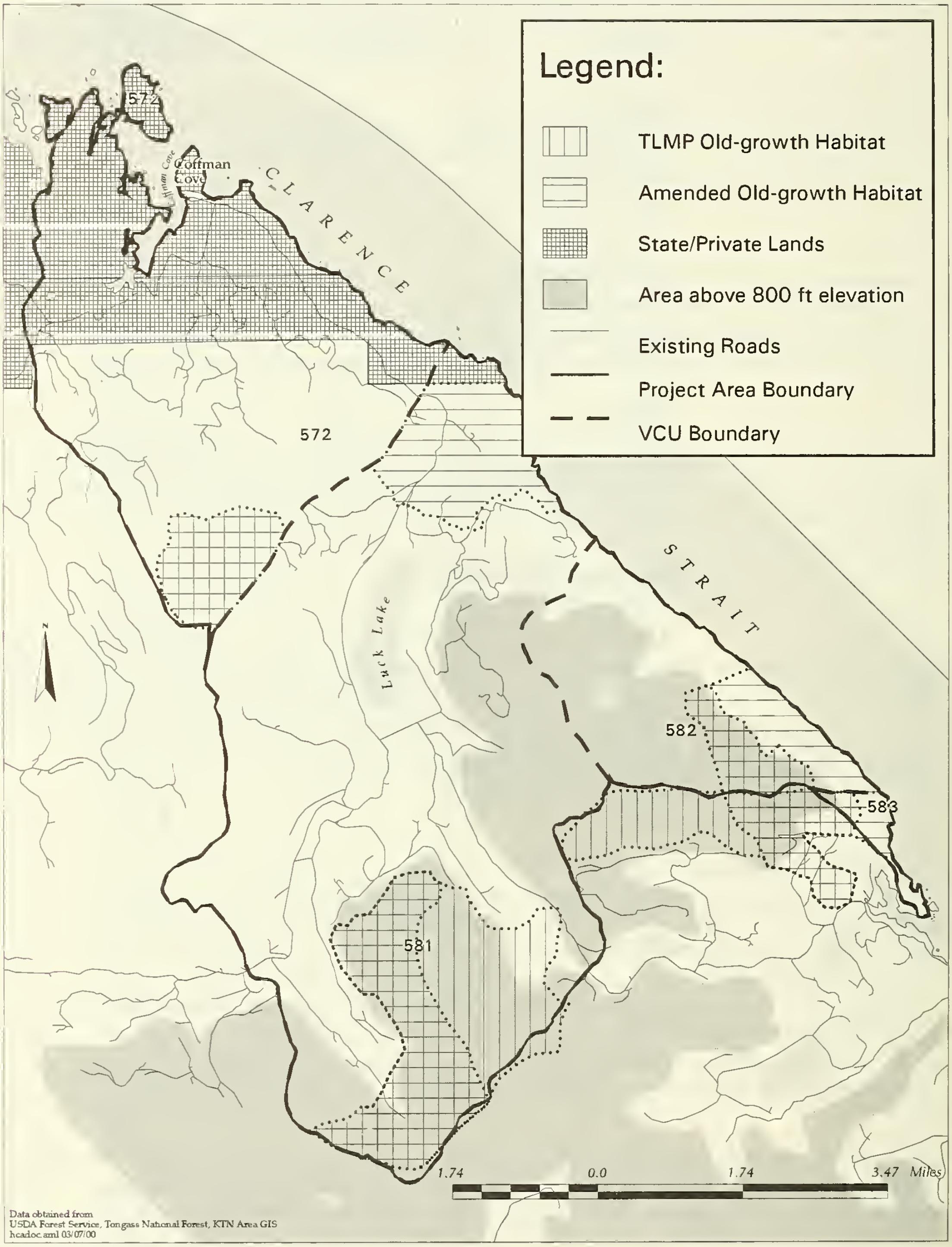
Project	Nondevelopment to Development LUD	Development to Nondevelopment LUD	Net Change in Suitable Acres
Luck Lake EIS	257	794	-537
Salty EA	99	126	-27
Kuakan EIS	416	542	-126
Sea Level EIS	185	500	-315
Canal Hoya EIS	0	151	-151
Chasina EIS	0	78	-78
Control Lake EIS	446	142	304
Crystal Creek EIS	481	1153	-672
Nemo Loop EA	177	932	-755
Todahl Backline EA	2	363	-361
Niblack EA	252	0	252
Total	**2,315**	**4,781**	**-2,466**

Source: 1998 Monitoring Report Draft

Conclusion

Based on a consideration of the factors above, I conclude adoption of this amendment is not significant in a National Forest Management Act context. This amendment is fully consistent with current Forest Plan goals and objectives. The amendment provides added detail on implementation of the old-growth habitat management prescriptions of the Forest Plan.

Figure A1-1
Adjustments to Luck Lake Project Area Old-growth Reserves



Appendix 2

Unit Cards

Table A2-1
Site-specific Mitigation Measures Incorporated into Unit Design

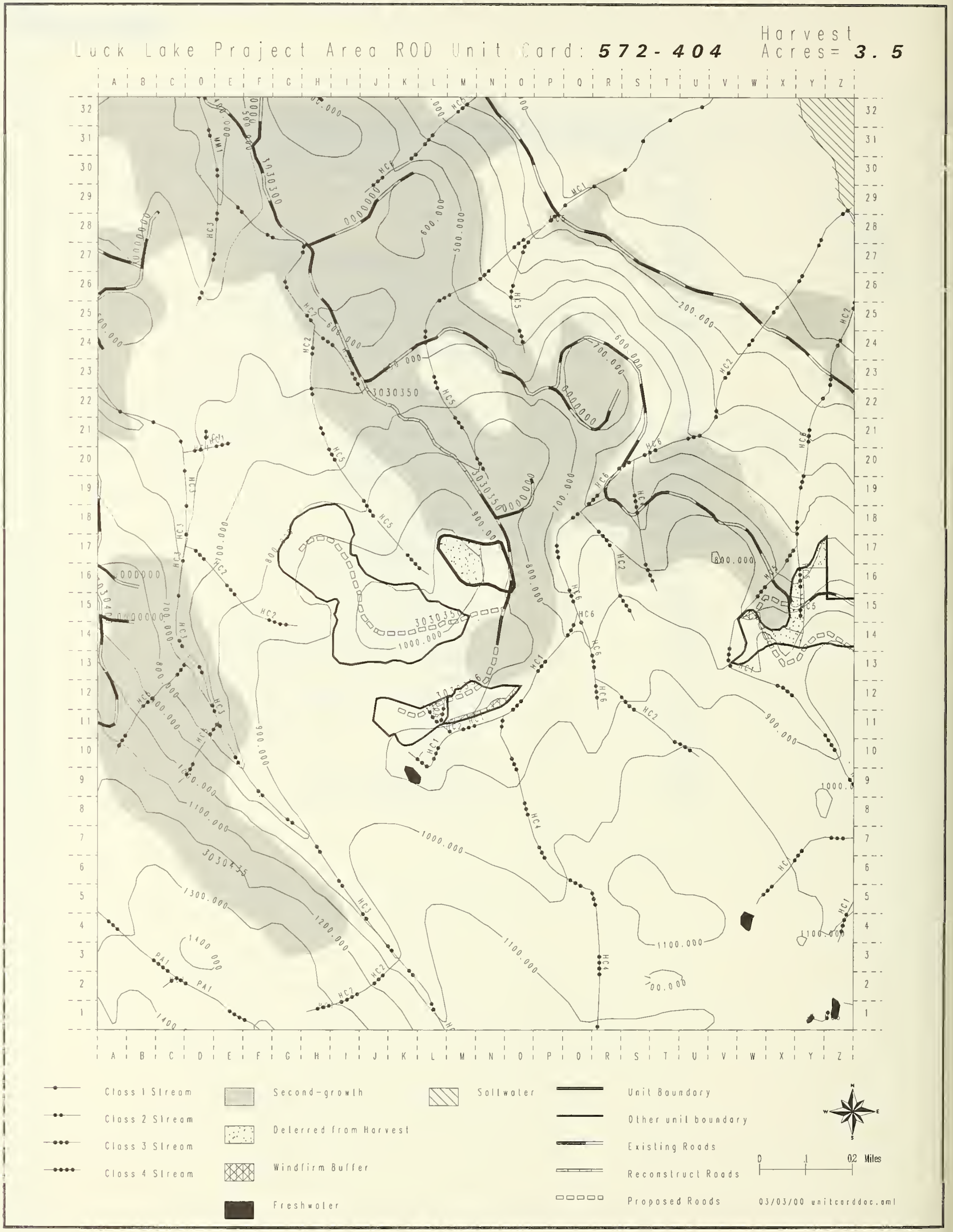
Mitigation Measure	Description	Number of units affected
Fish, Soil, Watershed		
F1	Modify unit design, logging system, or suspension requirements to minimize damage to muskegs, forested and other wetlands (BMP's 12.5 and 13.9)	15
F2	Establish no-harvest and selective-cut buffers along streams and around lakes to protect Riparian Management Areas (BMP 12.6). This includes TTRA minimums, RAW buffers, and additional areas as described in the Forest Plan Riparian standards and guidelines.	14
F3	Protect local water supplies by implementing oil pollution prevention and hazardous substance spill prevention measures (BMP's 12.8 and 12.9).	1
F4	Modify unit design to avoid very high mass movement areas (BMP 13.5), including slopes > 72%.	6
F5	Require partial- to full-suspension logging systems in areas with high mass movement potential, McGilvery soils, or steep slopes (BMP 13.9).	14
F6	Permit no harvest within V-notch riparian areas (BMP 12.6).	7
F7	Modify unit design to avoid harvest on Kitkun soils.	1
Karst and Caves		
K1	Develop and implement site-specific protective measures for cave and karst features containing significant resources.	2
Scenery		
S1	Design harvest to minimize or eliminate appearance of straight lines or geometric shapes.	13
S2	Conduct partial cutting of unit to minimize visual contrast with adjacent areas.	9
S3	Modify harvest boundaries to assure harvest unit meets VQO's.	4

Table A2-1
Site-specific Mitigation Measures Incorporated into Unit Design (cont.)

Mitigation Measure	Description	Number of units affected
Silviculture and Timber		
T1	Design harvest to minimize possibility of windthrow.	5
T2	Group reserve trees to promote windfirmness.	1
Wildlife		
W1	Implement marten and goshawk standards and guidelines for VCU's with more than 33% original POG harvested (retain 30% canopy closure, etc.)	22
W2	Defer harvest of units where goshawk nesting behavior is observed until nest is located. Modify unit boundaries to protect nest, if necessary.	2

Acronyms Used on Unit Cards

ADF&G	Alaska Department of Fish and Game
AHMU	aquatic habitat management unit
B/W	blue/white
BF	bank full
BMP	Best Management Practice
CF	cubic foot
CFR	Code of Federal Regulations
DBH	diameter at breast height
Dq	quadratic mean diameter
E	east
G/W	green/white
HE	helicopter
IT	individual tree
MA	management area
MBF	thousand board feet
M.P.H.	miles per hour
N	north
N/A	not applicable
NOGO	North American goshawk
O/W	orange/white
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
RS	running skyline
S	south
S&G's	Standards and Guidelines (from the Forest Plan)
SH	shovel
SL	slackline
TPA	trees per acre
VQO	visual quality objective
W	west



Luck Lake Project Area ROD Unit Card: 572-404
Harvest Acres= 3.5
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 .2 Miles
03/03/00 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 572-404 **Planned Acres:** 8 **Harvest Acres:** 4 **Estimated Volume:** 32 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-217 **Logging systems:** RS **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock **ASPECT:** NE
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 2 **High:** 2
SCENERY: Managed Viewshed: Alaska Marine Highway **VQO:** Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 0 **Class IV Streams:** 1
SOILS: **Type:** 6 ac 32CDX, 2 ac 351DE **Slopes Greater Than 72%:** 0 **Site Index:** 6 ac 80, 2 ac 100 (Farr, 50 yr. base by soils)

Soils Input: Forested wetlands interspersed with better-drained soils. Slopes less than 50 percent. Partial suspension will meet soils and wetland objectives. BMP's 12.5, 13.9, 13.10, 13.11, and 13.14.

Timber Input: Partial suspension required (BMP's 12.5, 13.9, 13.10, 13.11, 13.14). A small running skyline with lateral yarding capabilities will meet requirements and also provide flexibility to meet marten and goshawk standards and guidelines. Portions of the unit may be shovel logged.

Engineering Input: Accessed by FDR 3030350. See attached road card in Appendix C.

Fish/Watershed Input: Fisheries recon found no streams in this unit. One G/W, Class IV, HC5 found outside (west) of the unit boundary. Apply BMP's 13.9, 13.10, 13.11, 13.12 and 13.16, 14.3 and 14.5.

Wildlife Input: NOGO surveys completed: 4/7/97, 4/15/97, 07/16/98, and 07/22/98. NOGO seen circling over unit twice: 4/7/97. NOGO seen in vicinity of unit: 7/16/98. Implement goshawk and martin S&G's to maintain an average canopy closure of => 30%.

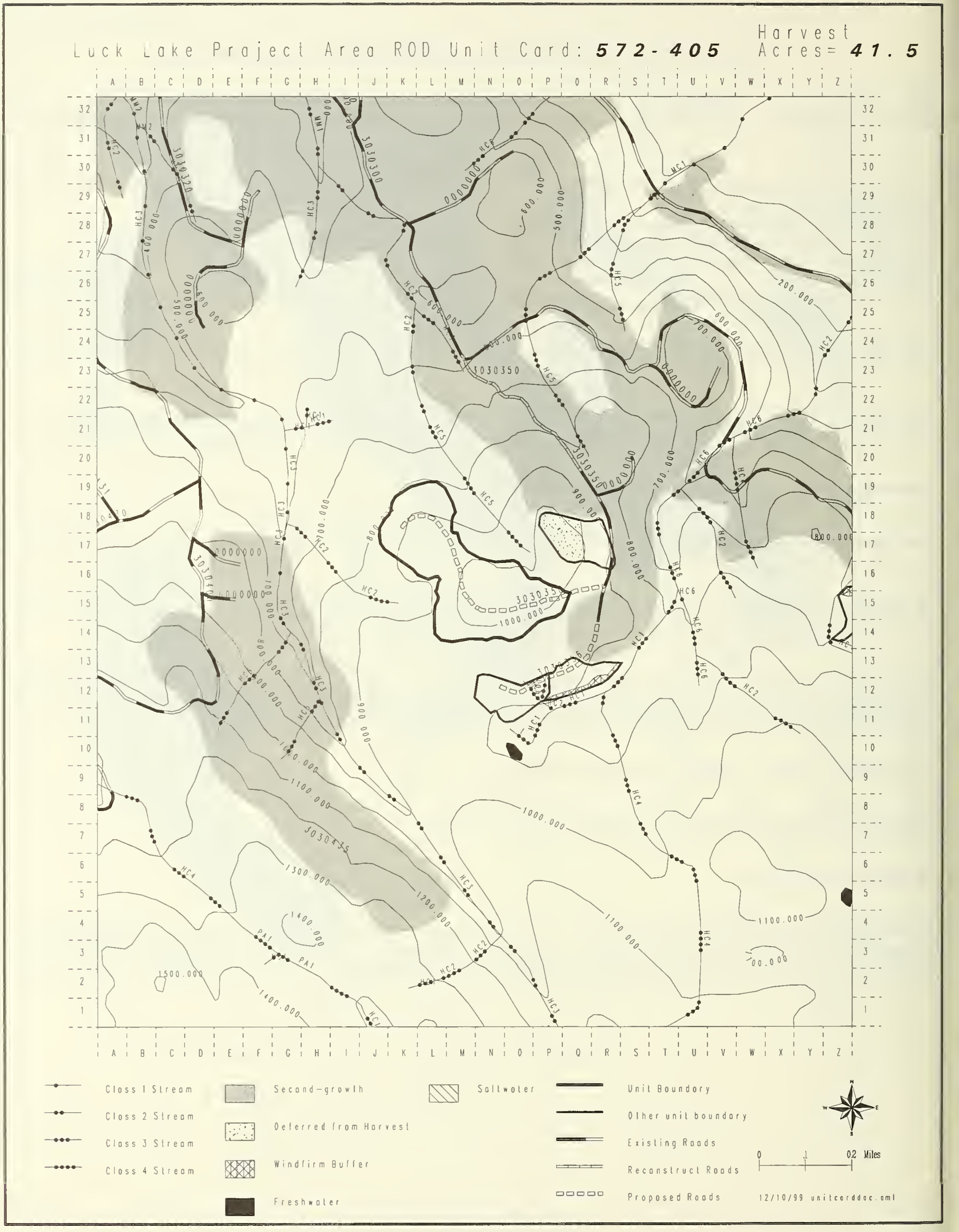
Recreation/Scenery Input: No established recreation use. Unit visible from Alaska Marine Highway. Design tree clumps and skyline corridors (if used) to minimize or eliminate the appearance of straight lines or geometric shapes. Adjacent impacts created by State of Alaska harvest push viewshed to limits of acceptable change, consequently, minimize any additional visible impacts created by this harvest unit and road system.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: As mapped, the entire unit is within stand 27 and has interspersed forested wetlands and requires a minimum of partial suspension during yarding. A small running skyline with lateral yarding and some shovel yarding is planned. A four-acre deferral due to low volume and road costs will contribute to retention levels required by S&G's. Harvest the remaining four acres adjacent to the existing road using two-aged harvest with reserves. Reserve trees in harvest area must represent at least 10% of the original stand structure and be well distributed.



Luck Lake Project Area ROD Unit Card: 572-405
Harvest Acres= 41.5
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 .02 Miles
12/10/99 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 572-405 **Planned Acres:** 42 **Harvest Acres:** 42 **Estimated Volume:** 402 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-217 **Logging systems:** RS **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock-spruce **ASPECT:** W
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 2 **Medium:** 40 **High:** 0
SCENERY: Managed Viewshed: Alaska Marine Highway/Coffman Cove **VQO:** Modification
RECREATION: **Primary ROS Code: Roaded** Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 0 **Class IV Streams:** 2
SOILS: **Type:** 32CDX **Slopes Greater Than 72%:** 0 **Site Index:** 80 (Farr, 50 yr. base by soils)

Soils Input: Mixed Conifer/blueberry plant association on poorly drained soils. Complex of forested wetlands and uplands. One short, steep slope is in the north end of the unit. Partial suspension on steeper slopes and shovel yarding on slopes less than 20 percent on the tops of knobs will meet resource concerns (BMP's 12.5, 13.9). Portions of the unit lie within the City of Coffman Cove water source watershed. Special attention should be given to oil pollution prevention (BMP 12.8) and other hazardous substance spill prevention (BMP 12.9). Two Class IV streams see Fish/Watershed section (BMP 13.16). Use retention areas to eliminate lower volume stands adjacent to bogs and meet Forest Plan requirements to avoid harvest on Kitkun soils.

Timber Input: Partial suspension is required on forested wetland soils. This unit can be logged with a running skyline logging system with lateral yarding capabilities, concentrate leave trees on areas of marginal logging feasibility. Average of 30% canopy closure will be maintained throughout the unit. Shovel log the areas on top of the knobs where slopes are less than 30%.

Engineering Input: Accessed by FDR 3030350. See attached road card in Appendix C.

Fish/Watershed Input: One Class IV Green/White stream was found outside the NE boundary and one Class IV, Green/White found outside (~200 ft.) the west boundary. No other water quality or fisheries concerns with this unit. Apply BMP's 13.9, 13.10, 13.11, 13.12, and 13.16, 14.3, and 14.5.

Wildlife Input: Found numerous Bog Orchids along the G/W stream in the NE corner. NOGO surveys completed: 4/07/97, 4/15/97. Implement goshawk and martin S&G's to maintain average of => 30% canopy closure. Heavy deer use indicated by browse.

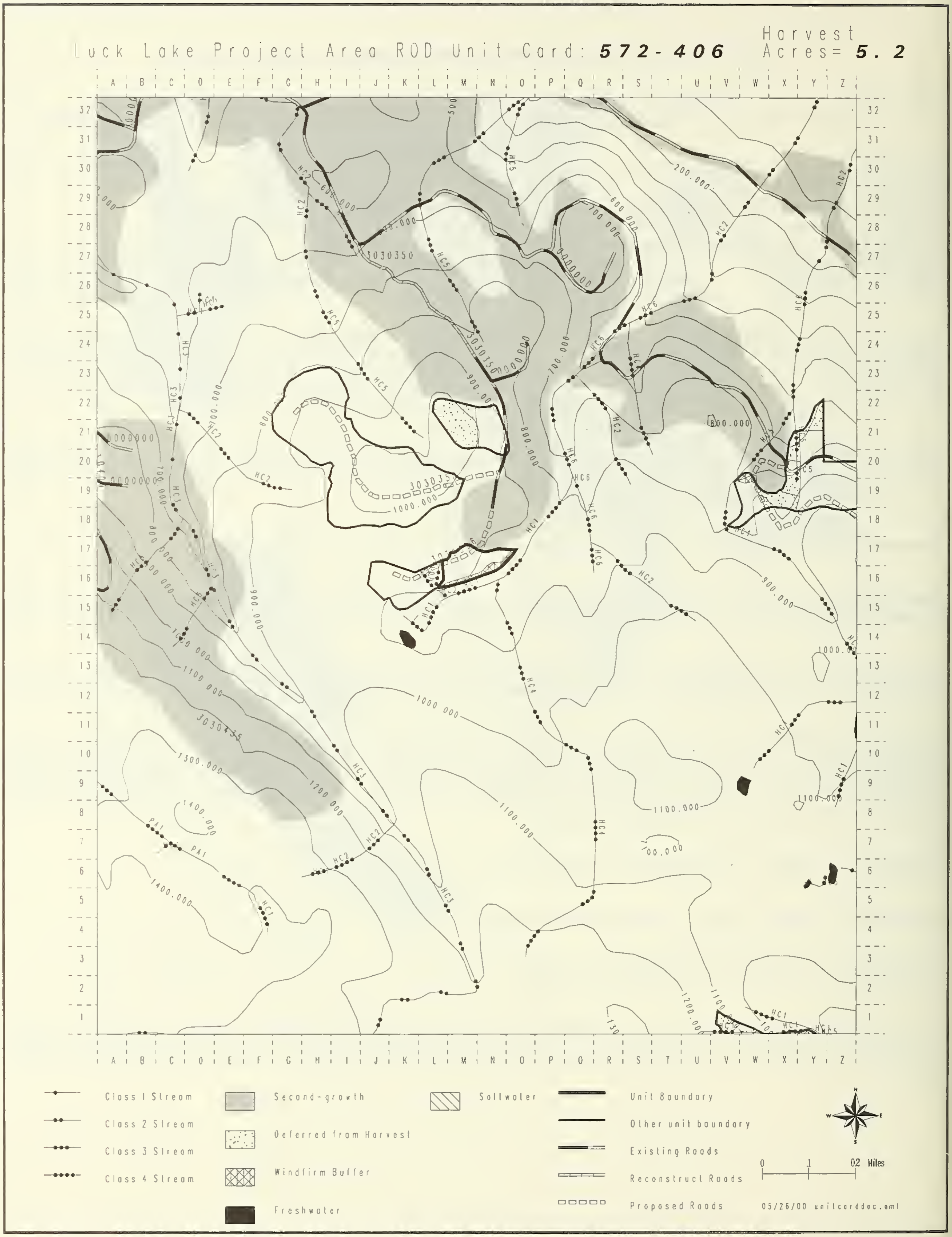
Recreation/Scenery Input: No established recreation use. Unit visible from Alaska Marine Highway. Design tree clumps and skyline corridors (if used) to minimize or eliminate the appearance of straight lines or geometric shapes. Disperse openings equally throughout unit by selecting individual trees by diameter or small clumps of trees. Leave at least 50% of original stand canopy closure, retaining an average canopy closure of at least 30%. Minimize openings in areas with high windthrow potential. Adjacent impacts created by State of Alaska harvest push viewshed to limits of acceptable change, consequently, minimize any additional visible impacts created by this harvest unit and road system.

Lands Input: No state/private or encumbered lands occur adjacent to the unit.

Cultural Resource Input: Unit outside high probability areas for cultural resources.

Geological Input: No karst located within the planned unit boundary.

Silviculture Input: Harvest using two-aged harvest with reserves - two aged is chosen to best meet overall objectives. Grouping of reserves is encouraged due to the potential for wind damage and should include areas of low timber volume, retention areas along bogs, etc. About 6 acres in retention groups as outlined above should be retained and harvest the remainder of the unit using two-aged harvest with reserves, retaining all live stems 22" DBH and greater between the groups.



Luck Lake Project Area ROD Unit Card: 572-406
Harvest Acres= 5.2
Class I Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 .02 Miles
05/26/00 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 572-406 **Planned Acres:** 5 **Harvest Acres:** 5 **Estimated Volume:** 56 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-217 **Logging systems:** RS **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock-spruce **ASPECT:** SE
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 5 **High:** 0
SCENERY: Managed Viewshed Alaska Marine Highway **VQO: Modification**
RECREATION: **Primary ROS Code** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 0 **Class IV Streams:** 2
SOILS: **Type:** 32CDX **Slopes Greater Than 72%:** 0 **Site Index:** 80 (Farr, 50 yr base by soils)

Soils Input: Cedar-hemlock-blueberry-skunk cabbage forested wetlands on poorly drained soils. Slopes less than 50 percent. Shovel yarding on slopes less than 20 percent and partial suspension on steeper slopes will meet resource objectives (BMP 12.5 and 13.9) . Two streams adjacent to the unit, see Fish/Watershed section (BMP 13.16 and 12.6a).

Timber Input: Recommend a small running skyline logging system with lateral yarding capabilities on slopes greater than 20%, and shovel logging on slopes less than 20%.

Engineering Input: Accessed by FDR 3030356. See attached road card in Appendix C.

Fish/Watershed Input: One Class IV, O/W stream located outside this unit, along the southern boundary. Downstream from unit the channel becomes very high gradient HC6 that prevents fish migration. One Class IV, G/W stream found outside the west boundary, in Unit 572-407. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12, and 13.16, 14.3, and 14.5.

Wildlife Input: NOGO surveys completed: 4/7/97, 4/15/97, 7/16/98, and 7/22/98. NOGO seen flying toward unit: 4/7/97. NOGO seen flying in vicinity of unit: 7/16/98. Implement martin and goshawk S&G's to maintain average => 30% canopy closure.

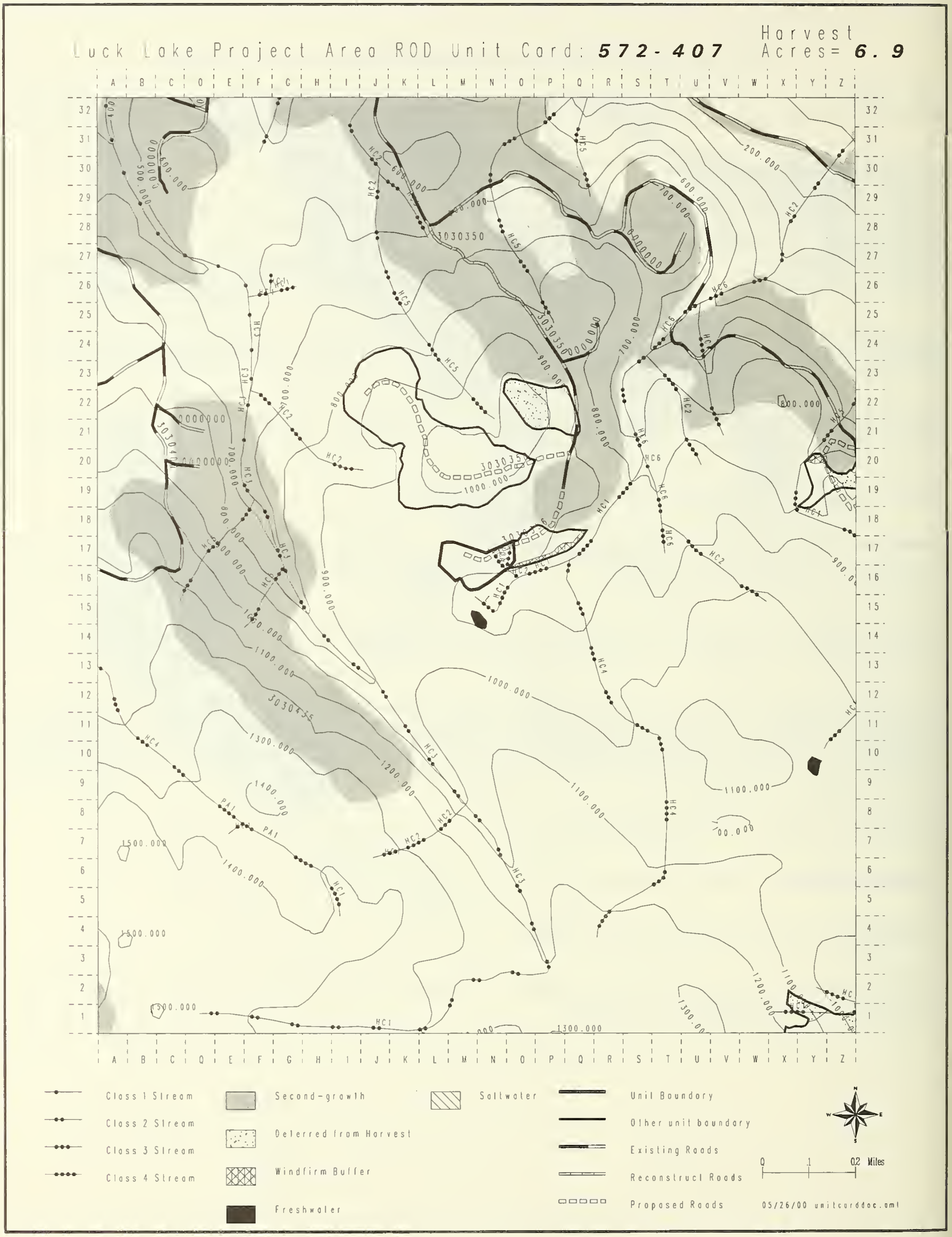
Recreation/Scenery Input: Unit visible from Alaska Marine Highway. Design tree clumps and skyline corridors (if used) to minimize or eliminate the appearance of straight lines or geometric shapes. Disperse openings equally throughout unit by selecting individual trees by diameter or small clumps of trees. Leave at least 50% of original stand canopy closure, retaining an average canopy closure of at least 30%. Minimize openings in areas with high windthrow potential. Adjacent impacts created by State of Alaska harvest push viewshed to limits of acceptable change, consequently, minimize any additional visible impacts created by this harvest unit and road system. No established recreation use.

Lands Input: No state/private or encumbered lands occur adjacent to the unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No karst located within the planned unit boundaries.

Silviculture Input: Potential during layout to combine units 406 and 407. Harvest using two-aged harvest with reserves, retaining all hemlocks 19" dbh and greater along with yellowcedar and spruce 26" dbh and greater.


Luck Lake Project Area ROD Unit Card: 572-407
Harvest Acres= 6.9
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 0.2 Miles
05/26/00 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 572-407 **Planned Acres:** 7 **Harvest Acres:** 7 **Estimated Volume:** 63 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-217 **Logging systems:** RS/SH **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock-spruce **ASPECT:** SE
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 6 **High:** 0
SCENERY: Managed Viewshed: Not Seen **VQO:** Maximum Modification
RECREATION: **Primary ROS Code: Roaded** Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 0 **Class IV Streams:** 2
SOILS: **Type:** 32CDX **Slopes Greater Than 72%:** 0 **Site Index:** 80 (Farr, 50 yr. base by soils)

Soils Input: Western hemlock-blueberry and cedar-hemlock-blueberry plant association on complex of forested wetland and forested upland. Slopes less than 50 percent. Combination of shovel yarding and partial suspension cable yarding will meet resource objectives for wetlands and soils (BMP's 12.5 and 13.9). See Fish/Watershed section for streamcourse protection (BMP 12.6a and 13.16).

Timber Input: Recommend using a small running skyline system with lateral yarding capabilities in combination with shovel yarding where applicable. Recommend a two-aged harvest with reserve tree prescription to meet martin and goshawk standards and guidelines.

Engineering Input: Accessed by FDR 3030356. See attached road card in Appendix C.

Fish/Watershed Input: One Class IV, G/W, HC2 along east unit boundary. One Class IV, O/W stream located outside the south unit boundary flowing from a pond. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12, and 13.16, 14.3 and 14.5.

Wildlife Input: Pond located due south of the unit boundary. NOGO survey completed: 4/7/97, 4/15/97, 7/16/98, and 7/22/98. NOGO seen flying toward unit: 4/7/97. Implement marten and goshawk S&G's to maintain average => 30% canopy closure. High deer use noted (browse and trails).

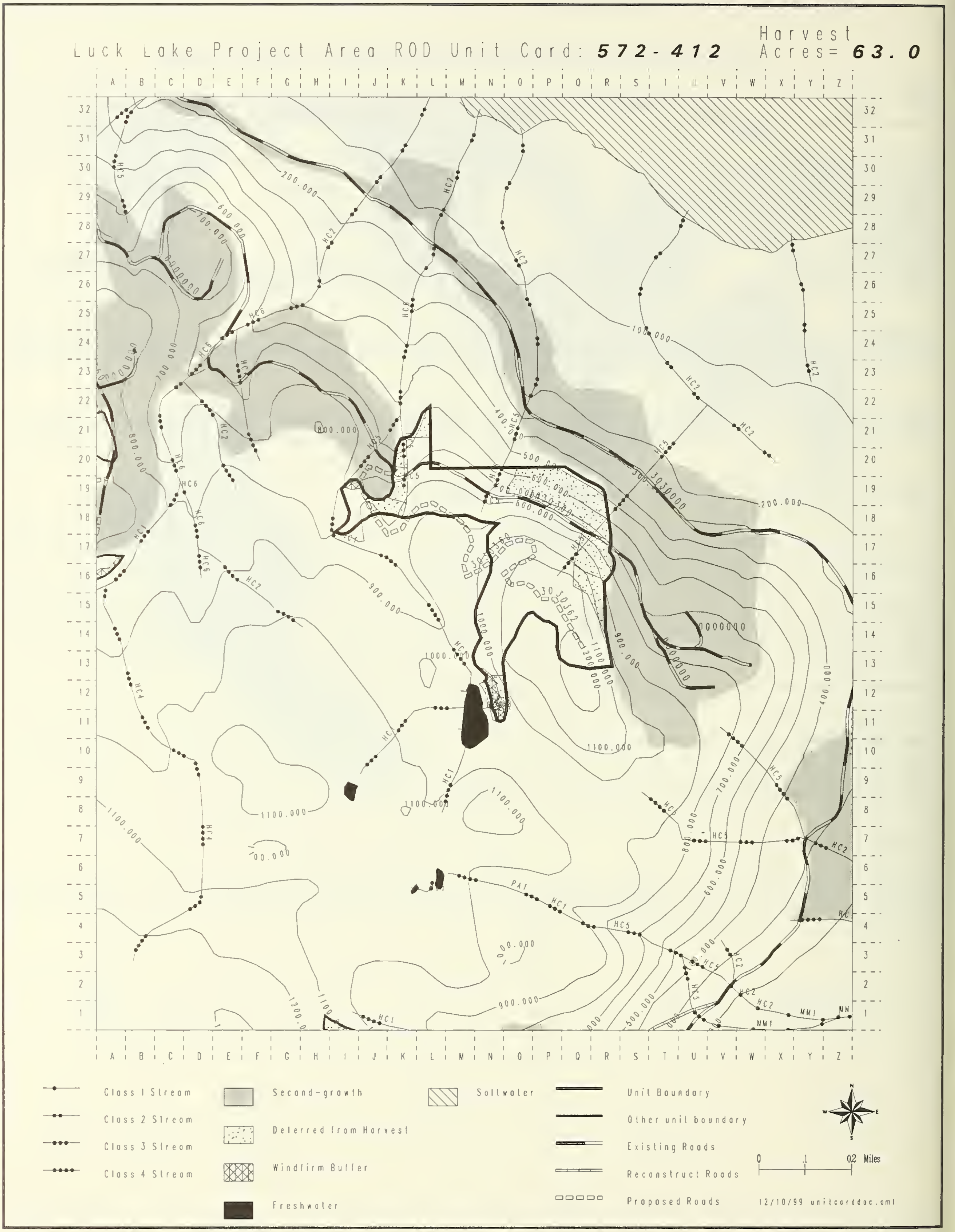
Recreation/Scenery Input: Unit not seen from any priority travel route or use area. No established recreation use.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: Potential during layout to combine units 406 and 407. Harvest using two-aged harvest with reserves, retaining all hemlocks 19" dbh and greater along with yellowcedar and spruce 26" dbh and greater.


Luck Lake Project Area ROD Unit Card: 572-412
Harvest Acres= 63.0
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 0.2 Miles
12/10/99 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 572-412 **Planned Acres:** 89 **Harvest Acres:** 63 **Estimated Volume:** 1110 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-102 **Logging systems:** S **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock-spruce **ASPECT:** NE
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 45 **High:** 18
SCENERY: Managed Viewshed: Alaska Marine Highway **VQO: Modification**
RECREATION: **Primary ROS Code: Roaded** Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 1 **Class IV Streams:** 8
SOILS: Type: 35 ac 351DE, 52 ac 32CDX, 2-3 ac 30CFX **Slopes Greater Than 72%:** 3 **Site Index:** 37 ac 100, 52 ac 80 (Farr, 50 yr. base by soils)

Soils Input: Cedar-hemlock-blueberry-skunk cabbage forested wetland stands in the southern portion of the unit. Upland soils shallow to bedrock cover approximately 70 percent of unit 412. See the soils reconnaissance report in the soil and wetland resource report. Minor areas of Kitkun soils in small swales in the southwestern corner of the unit. The planned unit configuration contains approximately 8 acres on slopes over 72 percent. At least five of these acres are within a reserve area, leaving 3 acres within the proposed harvest area (BMP 13.5). A small landslide was noted in the blowdown in this area. Partial suspension is required across the rest of the unit (BMP 13.9). There are opportunities for shovel yarding on about 3 acres (BMP 13.9). The stream draining the small lake west of the unit has a small V-notch riparian area that is entirely within the buffer. A narrow lakeshore fen forms the riparian area around the lake. See Fish/Watershed section for lake and streamcourse protection (BMP 12.6a and 13.16). Windthrow of retention trees is a concern in the northeast corner of unit 412.

Timber Input: Recommend skyline with lateral yarding capabilities. Partial suspension is required over the majority of the unit. Recommend corridor logging to meet martin and goshawk standards and guidelines.

Engineering Input: Accessed by FDR 3030360 and FDR 3030362. See attached road cards in Appendix C.

Fish/Watershed Input: One Class IV, Orange/White, HC1 found along the northwest tip of the unit and becoming Class III outside the NW unit boundary that requires a slope-break buffer and reasonable assurance of windfirmness buffer. One Class IV, G/W flowing out of the north tip of the unit and into stream 412-1. One Class IV, Orange/White, HC5 channel found flowing out of the north end of the unit; Class IV, Green/White flows into the O/W. One Class IV, Orange/White, HC5 channel found in the southeast corner of the unit. One Class IV, Green/White, HC1 found along the southwest unit boundary flowing out of the lake and into the O/W section of stream 412-1. Three connected Class IV, Green/White, HC2 channels found in the south tip of the unit flowing into the lake. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16, 14.3 and 14.5.

Wildlife Input: Moderate to high wildlife use noted during silvicultural exam. NOGO surveys completed: 4/07/97, 4/18/97, and 7/14/97. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

Recreation/Scenery Input: Unit located in middle ground low VAC, existing visual condition does not meet visual quality objective, partial cutting required to meet VQO. Unit is visible from Alaska Marine Highway. Design tree clumps and skyline corridors (if used) to minimize or eliminate the appearance of straight lines or geometric shapes. Adjacent impacts created by State of Alaska harvest push viewshed to limits of acceptable change, consequently, minimize any additional visible impacts created by this harvest unit and road system. No established recreation use.

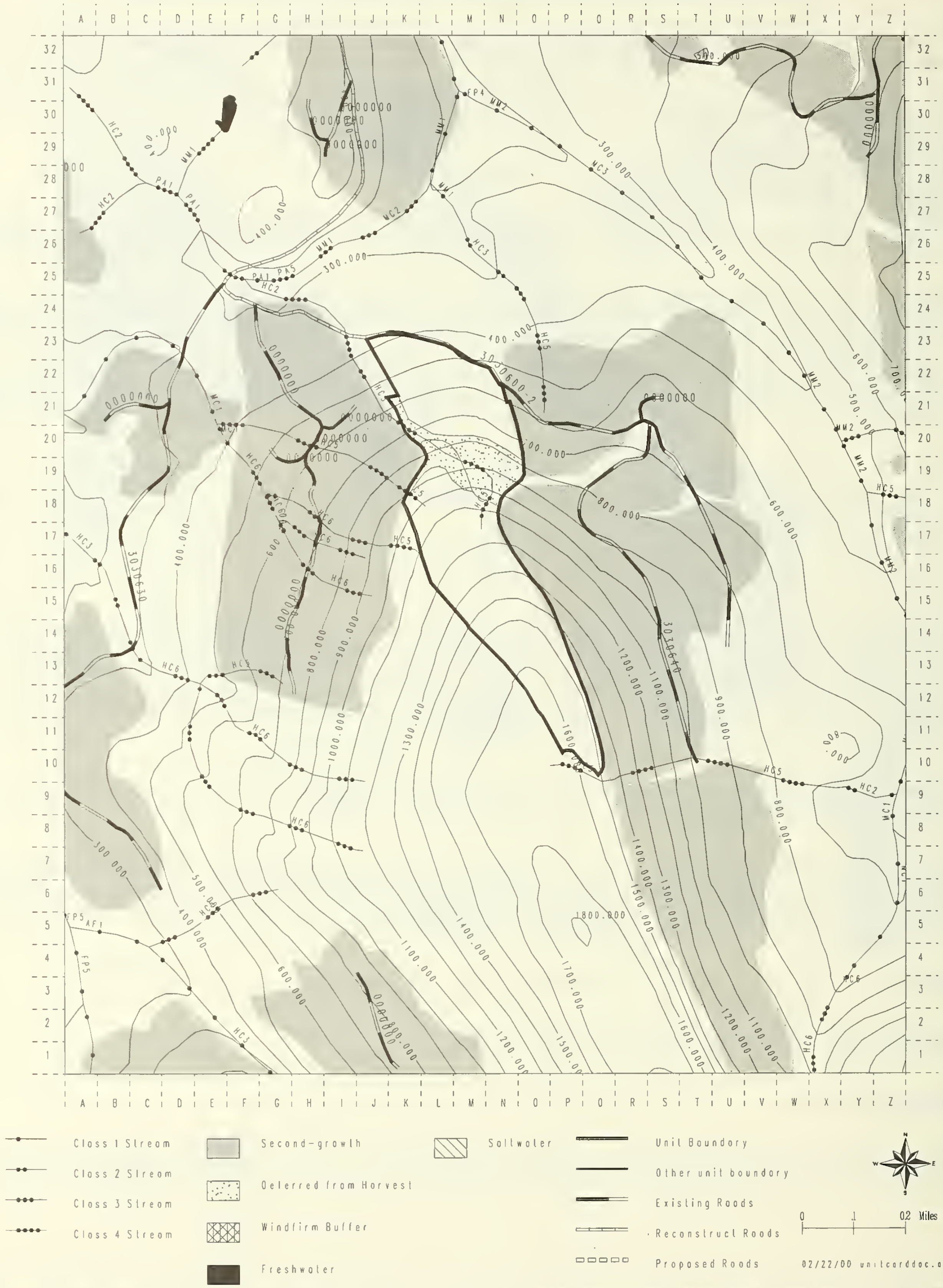
Lands Input: Northern unit boundary is located on state/private boundary survey required prior to harvest.

Cultural Resource Input: Unit outside of high probability area for cultural resources.

Geological Input: No concerns.

Silviculture Input: A total of 26 acres of deferral has been designated for various resource reasons. Harvest the remainder of the planned unit using two-aged harvest with reserves, retaining all hemlock 22 inches dbh and over along with yellowcedar and spruce in the 16 to 18 inch dbh classes.

Luck Lake Project Area ROD Unit Card: **572-425** Harvest Acres= **75.2**



UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 572-425 **Planned Acres:** 88 **Harvest Acres:** 75 **Estimated Volume:** 1353 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NW **Photo:** 690-158 **Logging systems:** HE **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock-spruce **ASPECT:** N
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 3 **Medium:** 17 **High:** 53
SCENERY: Managed Viewshed: Coffman Cove/Alaska Marine Highway **VQO:** Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 0 **Class IV Streams:** 4
SOILS: **Type:** 40 ac 351DE, 7 ac 32CDX **Slopes Greater Than 72%:** 1 **Site Index:** 40 ac 100, 7 ac 80 (Farr, 50 yr. base by soils)

Soils Input: Hemlock-spruce-blueberry, hemlock-blueberry, and cedar-hemlock-blueberry-skunk cabbage plant associations within the unit. Minor areas of poorly drained Kitkun and St. Nicholas soils supporting forested wetlands near the non-forested bog on the ridgetop. Unit is mostly well-drained uplands. About one acre is on slopes over 72 percent. Partial suspension is required to meet soil resource protection needs (BMP 12.5, 13.5 and 13.9). Several water quality streams occur in the unit with very small riparian areas below the slope-break on these streams in the northwest corner of the unit. The riparian area is entirely within the slope-break buffer (BMP 12.6, 12.6a and 13.16).

Timber Input: Final configuration includes acreage to the N and wind damage along past harvest boundaries. Recommend helicopter logging.

Engineering Input: Reconstruction along FDR 3030600 to access helicopter landing site. See attached road card in Appendix C.

Fish/Watershed Input: Timber recon found one Class IV O/W turning to G/W and three Class IV G/W streams within this unit. The O/W is located in the north end of the unit and is G/W near the east unit boundary. Two Class IV G/W streams are located just inside the west unit boundary and flowing west through the existing clearcut. One Class IV G/W flows west to east along the south unit boundary. Fisheries did not recon the proposed north unit addition. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12, and 13.16, 14.3, 14.5 and 14.7.

Wildlife Input: Trails and sign noted throughout the area with moderate indications of use noted during silvicultural exam. NOGO surveys completed: 4/15/97, 4/16/98. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

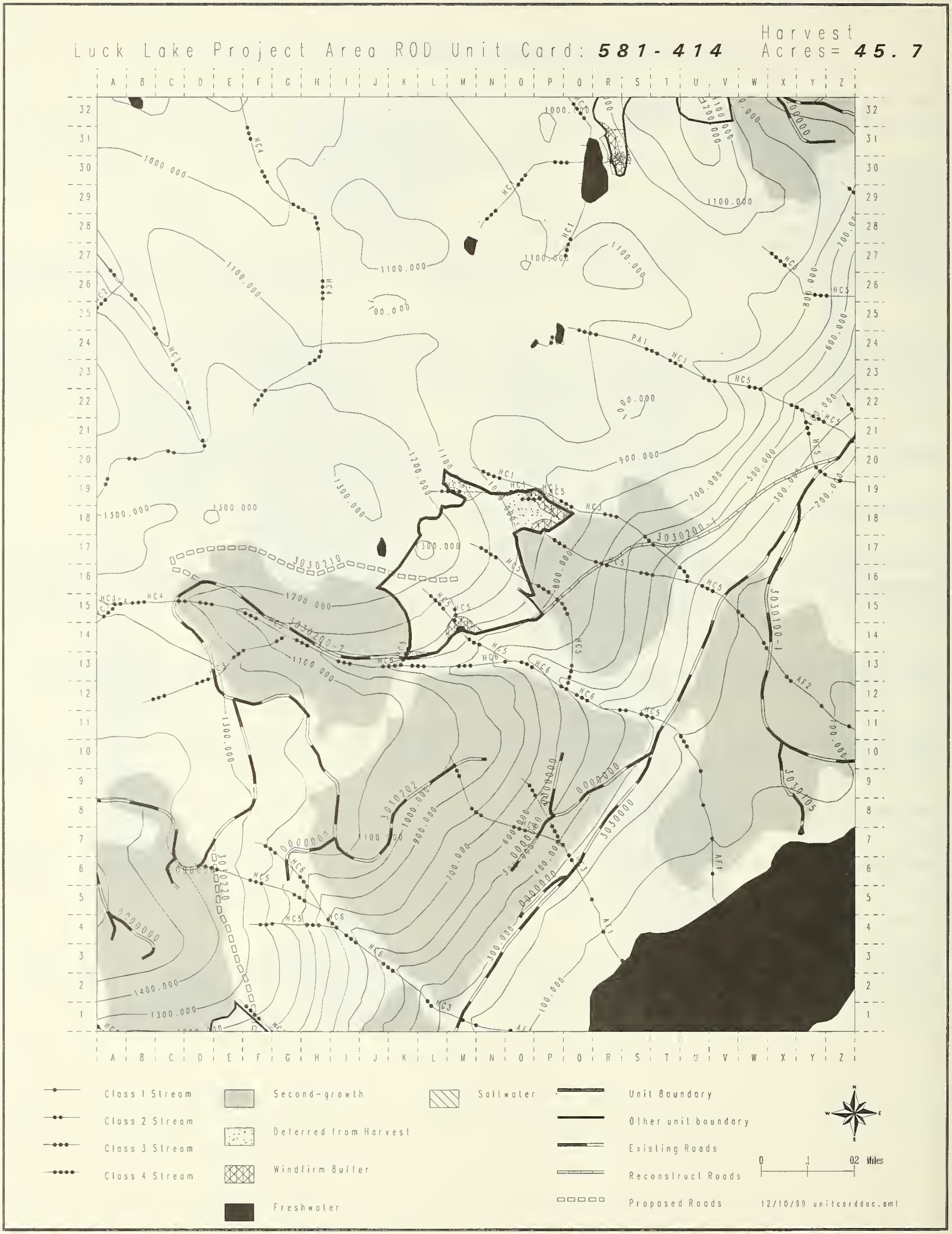
Recreation/Scenery Input: Unit is visible from Coffman Cove and Alaska Marine Highway. Design tree clumps and skyline corridors (if used) to minimize or eliminate the appearance of straight lines or geometric shapes. No established recreation use.

Lands Input: No state/private or encumbered lands occur adjacent to the unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: A total of 13 acres has been deferred for various resource reasons. Harvest the remaining area using two-aged harvest with reserves, retaining hemlocks 24 inches dbh and greater along with spruce and cedar 16" dbh and less.



Luck Lake Project Area ROD Unit Card: 581-414
Harvest Acres= 45.7
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 .02 Miles
12/10/99 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-414 **Planned Acres:** 54 **Harvest Acres:** 46 **Estimated Volume:** 865 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-102 **Logging systems:** RS/SH **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock-spruce **ASPECT:** E-SE
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 1 **High:** 45
SCENERY: Managed Viewshed: Luck Lake Boat Launch/Alaska Marine Highway **VQO:** Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 1 **Class IV Streams:** 7
SOILS: **Type:** 21 ac 30CFX, 6 ac 32CDX **Slopes Greater Than 72%:** 0 **Site Index:** 21 ac 100, 6 ac 80 (Farr, 50 yr. base by soils)

Soils Input: Hemlock-blueberry and Cedar-hemlock-blueberry plant stands on slopes less than 70 percent. Average slope is about 35 percent. Minor areas of cedar-hemlock-blueberry-skunk cabbage forested wetlands occur along the northern fringe of the unit. Partial suspension with cable systems and minor amounts of shovel yarding will meet resource protection needs (BMP 13.9 and 12.5). A small riparian area occurs below the slope-break on one water quality stream. The riparian area is entirely within the buffer (BMP 12.6). See Fish/Watershed section for streamcourse protection needs (BMP 12.6a & 13.16).

Timber Input: Recommend shovel swing logging system with patches of harvest (shovel) on the benches with corridors to the road running skyline swing. This harvest method will meet martin and goshawk standards and guidelines while maintaining scenic integrity.

Engineering Input: Accessed by FDR 3030200 and FDR 3030210. See attached road card in Appendix C.

Fish/Watershed Input One Class III, O/W, HC3 stream found along the northeast unit boundary requiring a slope-break buffer and reasonable assurance of a windfirm buffer; a Class IV, O/W section flows into the Class III; a Class IV, G/W section flows into the O/W section. One Class IV, O/W, HC5 found in the southern unit boundary, becoming a Class IV, Green/White. One small Class IV, G/W, HC5 stream found mid and south unit. One Class IV, G/W, HC5 stream found in the southern unit boundary flowing into the O/W creek. One Class IV, Green/White stream flowing into the Class III section from within the NE unit section. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16, 14.3 and 14.5.

Wildlife Input: Moderate wildlife sign observed during silvicultural exam. NOGO surveys completed: 4/15/97. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

Recreation/Scenery Input: Unit visible from Luck Lake Boat Launch and Alaska Marine Highway. Design tree clumps and skyline corridors (if used) to minimize or eliminate the appearance of straight lines or geometric shapes. Adjacent harvest impacts have pushed this viewshed to limits of acceptable change, consequently, minimize any additional visible impacts created by this harvest unit and road system. No established recreation use.

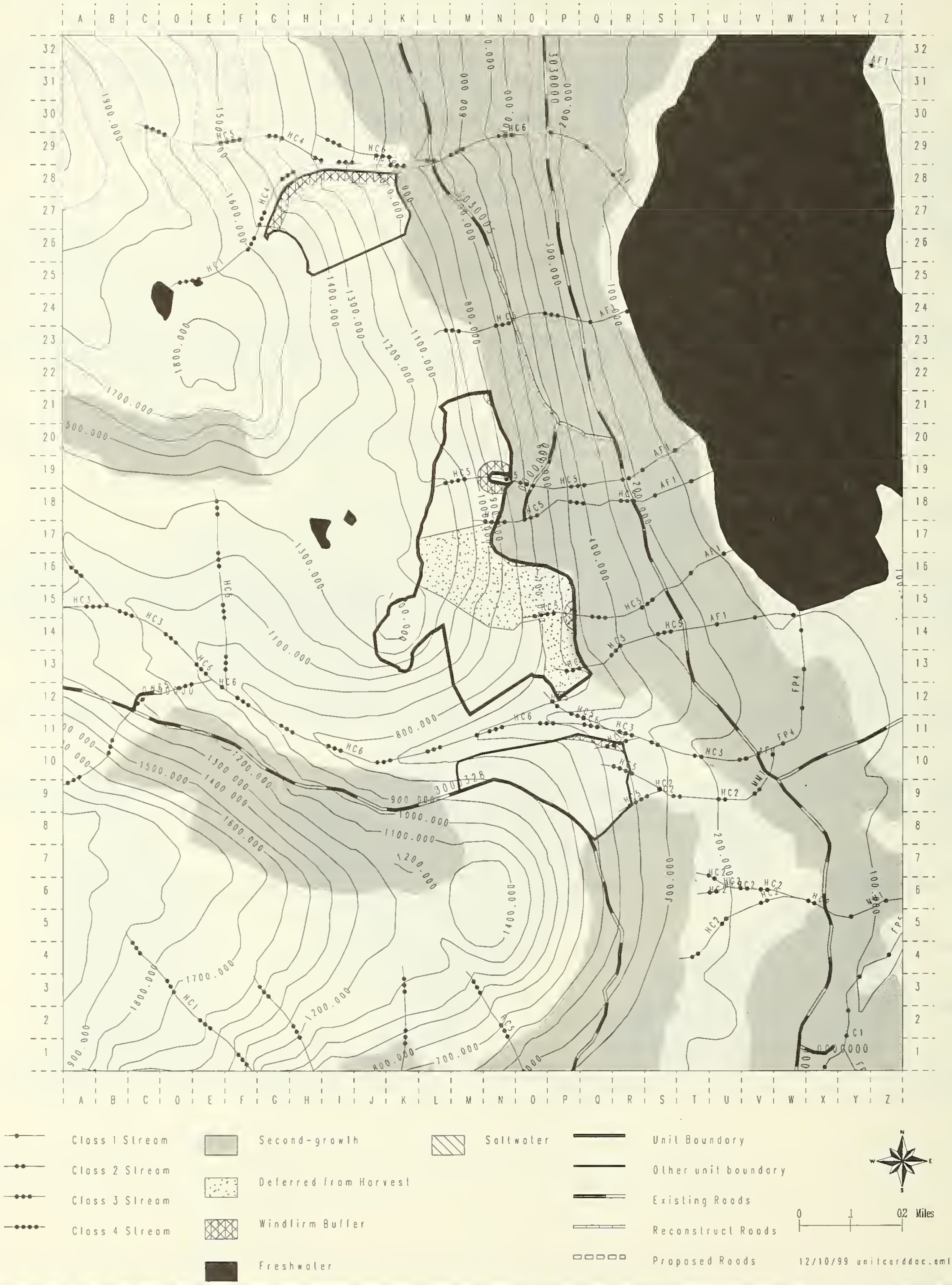
Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: Approximately 8 acres have been deferred from harvest in this entry due to various resource concerns. Harvest the remainder of the planned unit using two-aged harvest with reserves, retaining all hemlock 18 inches dbh and greater along with spruce and cedar 14 inches dbh and less.

Luck Lake Project Area ROD Unit Card: **581-417** Harvest Acres= **46.0**



UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-417 **Planned Acres:** 86 **Harvest Acres:** 46 **Estimated Volume:** 911 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-212 **Logging systems:** HE **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock-spruce **ASPECT:** E
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 14 **High:** 32
SCENERY: Managed Viewshed: Luck Lake Boat Launch/Alaska Marine Highway **VQO:** Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 2 **Class IV Streams:** 5
SOILS: **Type:** 35 ac 351DE, 30 ac 550CE, 2 ac 331CD, 8 ac 32CDX **Slopes Greater Than 72%:** 10 **Site Index:** 35 ac 100, 30 ac 70, 2 ac 90, 8 ac 80 (Farr, 50 yr. base by soil)

Soils Input: Hemlock-blueberry and Cedar-hemlock-blueberry stands on Tolstoi and St. Nicholas soils. Minor areas of McGilvery soils are present. Cliffs less than 30 feet high and slopes over 72 percent occupy about 10 acres scattered through the upper portion of the unit. Landslide potential is moderate to high in most of the unit. Partial suspension will meet soil protection needs (BMP 13.9 and 13.5). A 30 to 50 foot deep V-notch flows along the south side of the unit and has a definable riparian area below the slope-break. The riparian area is entirely within the no-cut buffer (BMP 12.6). See Fish/Watershed section for streamcourse protection needs (BMP 12.6a and 13.16).

Timber Input: Recommend helicopter logging as road construction is difficult, and terrain is not compatible with contemporary cable logging.

Engineering Input: No concerns.

Fish/Watershed Input: One Class III, O/W, HC3 stream found along the south unit boundary requiring a slope-break buffer and reasonable assurance of windfirmness buffer. One Class IV, O/W stream flowing into stream 417-1 near the SE portion of the unit. Two Class IV, Green/White streams located in the SE section of the unit and flowing east. One Class IV, Green/White stream flowing into a Class IV, O/W stream found in the north section of unit and becoming a Class III, O/W stream before exiting the unit and requiring a slope-break buffer and reasonable assurance of windfirmness buffer for the Class III section. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16, 14.3, 14.5 and 14.7.

Wildlife Input: Moderate wildlife use indicated during silvicultural exam. NOGO surveys completed: 4/4/97, 4/7/97. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

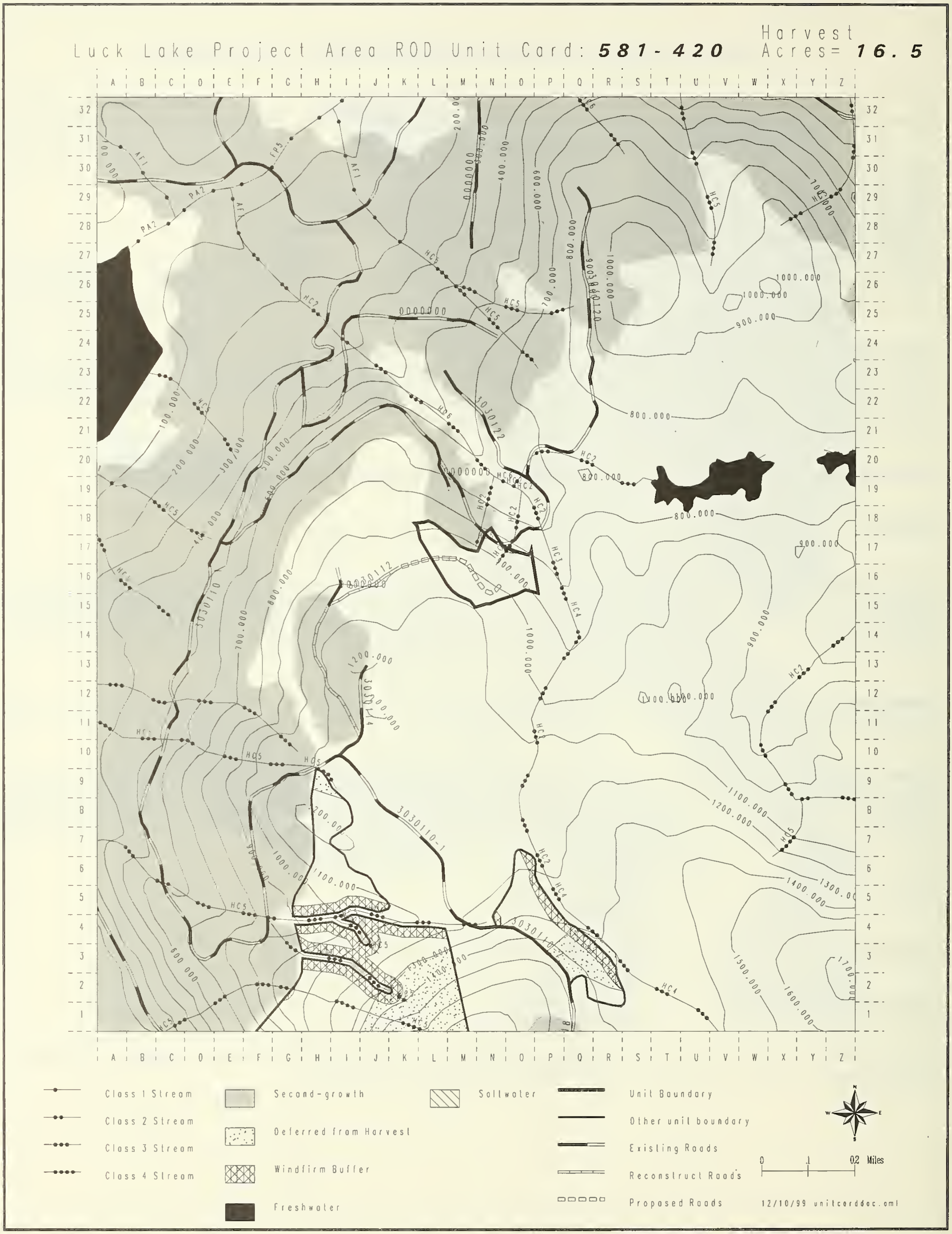
Recreation/Scenery Input: Unit visible from Alaska Marine Highway and Luck Lake Boat Launch. Design tree clumps and skyline corridors (if used) to minimize or eliminate the appearance of straight lines or geometric shapes. Disperse openings equally throughout unit by selecting individual trees by diameter or small clumps of trees. Leave 50% of existing stand canopy closure, retaining an average canopy closure of at least 30%. Minimize openings in areas with high windthrow potential. Adjacent harvest impacts have pushed this viewshed to limits of acceptable change; consequently, minimize any additional visible impacts created by this harvest unit and road system. No established recreation use.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: Approximately 40 acres has been retained due to various resource concerns. Harvest the remainder of the planned unit using two-aged harvest with reserves, retaining all Western redcedar 38 inches and greater along with all western hemlocks.


Luck Lake Project Area ROD Unit Card: 581-420
Harvest Acres= 16.5
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 0.2 Miles
12/10/99 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-420 **Planned Acres:** 28 **Harvest Acres:** 17 **Estimated Volume:** 201 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-208 **Logging systems:** RS **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: hemlock-yellowcedar **ASPECT:** NNE
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 0 **High:** 17
SCENERY: Managed Viewshed: Luck Lake Boat Launch/Alaska Marine Highway **VQO:** Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 1 **Class IV Streams:** 2
SOILS: **Type:** 28 ac 351DE, 2 ac 32CDX **Slopes Greater Than 72%:** 0 **Site Index:** 28 ac 100, 2 ac 80 (Farr, 50 yr. base by soils)

Soils Input: Hemlock-blueberry and cedar-hemlock-blueberry stands on slopes up to 70 percent. Areas of forested wetlands on the fringes of the unit and in the eastern end of the unit. Partial suspension will meet wetland and soil resource protection needs (BMP 13.9 and 12.5). One large V-notch with an identifiable riparian area below the slope-break. The entire riparian area will be within the buffer (BMP 12.6 and 12.6a). See Fish/Watershed section for streamcourse protection (BMP 12.6a and 13.16).

Timber Input: Field review verified presence of a large Class III V-notch on the eastern boundary resulting in a logical setting break. The original unit boundary was on the other side of the stream creating a partial setting. The unit can be roaded at mid slope from the existing road to the west. Good landing locations were noted along the bench in the upper 1/3rd of the unit.

Engineering Input: Accessed by FDR 3030112 and FDR 3030120. See attached road cards in Appendix C.

Fish/Watershed Input: One large Class III, O/W, HC3 V-notch found along the east unit boundary requiring a slope-break buffer and reasonable assurance of a windfirm buffer. One Class IV, G/W, HC5 found along the north unit boundary and one Class IV, G/W, HC2 ~mid-unit flowing north. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16, 14.3 and 14.5.

Wildlife Input: Heavy wildlife use noted in silvicultural exam. NOGO surveys completed: 7/3/97. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

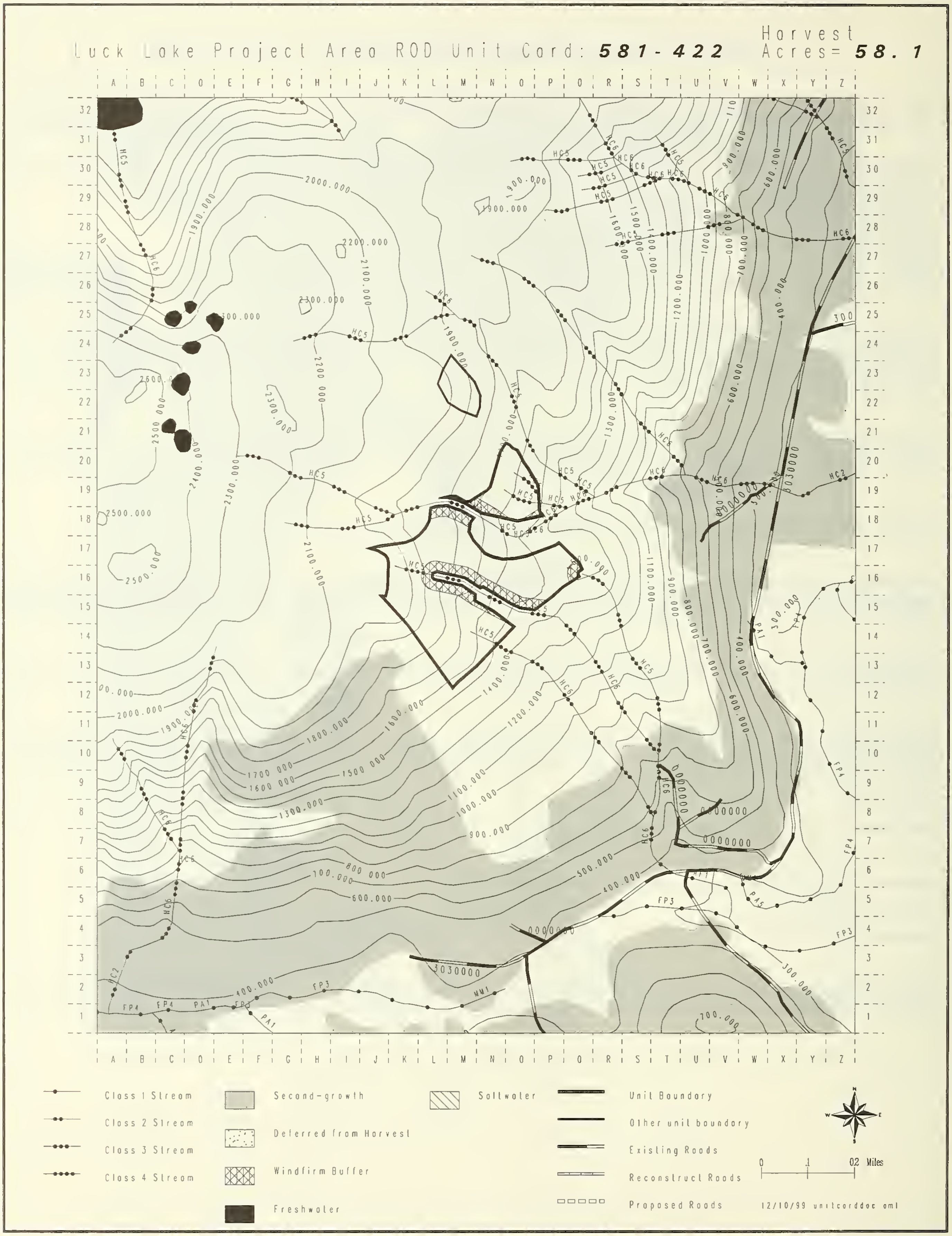
Recreation/Scenery Input: Design tree clumps and skyline corridors (if used) to minimize or eliminate the appearance of straight lines or geometric shapes. Adjacent harvest impacts have pushed this viewshed to limits of acceptable change; consequently, minimize any additional visible impacts created by this harvest unit and road system. No established recreation use.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability area for cultural resources.

Geological Input: No concerns.

Silviculture Input: Approximately 11 acres has been deferred from harvest in this entry due to various resource concerns. Harvest using two-aged harvest with reserves, retaining all hemlock 24 inches and greater along with yellowcedar and spruce in the 9 to 12 inch dbh classes.


Luck Lake Project Area ROD Unit Card: 581-422
Harvest Acres= 58.1
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 0.2 Miles
12/10/99 unitcarddoc aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-422 **Planned Acres:** 70 **Harvest Acres:** 58 **Estimated Volume:** 1151 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-208 **Logging systems:** HE **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: hemlock-spruce **ASPECT:** SE
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 0 **High:** 58
SCENERY: Managed Viewshed: Not Seen **VQO:** Maximum Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 3 **Class IV Streams:** 3
SOILS: **Type:** 35 ac 550CE, 25 ac 351DE **Slopes Greater Than 72%:** 2 **Site Index:** 35 ac 70, 25 ac 100 (Farr, 50 yr. base by soils)

Soils Input: Unit 422 was modified after reconnaissance to meet resource concerns (BMP 13.2) Unit includes hemlock-blueberry and cedar-hemlock-blueberry-skunk cabbage stands. About 2 acres of the unit lie on slopes over 72 percent near the west unit boundary. Partial suspension is required to protect the soils resource (BMP 13.9 and 13.5). A small non-forested bog lies adjacent to the large V-notch and was included in the notch buffer (BMP's 12.5, 12.6a, and 13.16). The riparian area on three water quality streams occurs below the slope-break and is included in the windfirm buffers (BMP 12.6, 12.6a, and 13.16) See Fish/Watershed section for streamcourse protection measures (BMP 12.6a and 13.16).

Timber Input: Recommend helicopter logging.

Engineering Input: No concerns.

Fish/Watershed Input: One Class III, Orange/White, HC6 V-notch found in the north end of the unit requiring a slope-break buffer and reasonable assurance of a windfirm buffer. One Class III, Orange/White, HC5 V-notch found in the mid-south end of the unit requiring a slope-break buffer and reasonable assurance of a windfirm buffer. One Class III, O/W V-notch found bisecting the unit into a north and south polygon requiring a slope-break buffer and a reasonable assurance of windfirmness buffer. Three Class IV, Green/White, HC5 channels found, two in the north unit section flowing into each other and one flowing into the south polygon Class III stream. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16.

Wildlife Input: Moderate to heavy wildlife sign and snag habitat noted during silvicultural exam. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

Recreation/Scenery Input: No concerns as planned. No established recreation use.

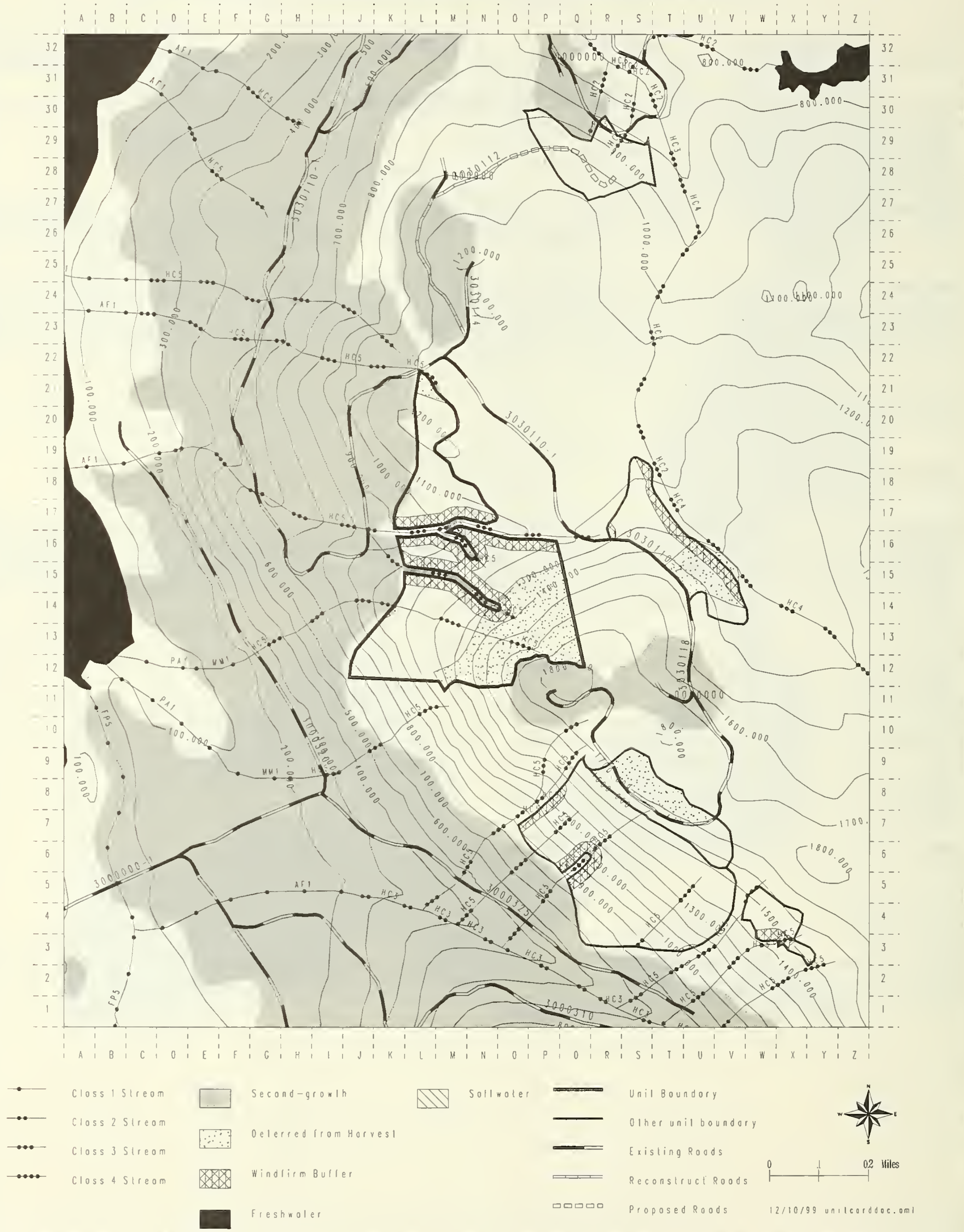
Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: Approximately 12 acres has been deferred from harvest this entry due to various resource concerns. Harvest the remaining portion of the planned unit using two-aged harvest with reserves, retaining all hemlock 28 inches dbh and greater.

Luck Lake Project Area ROD Unit Card: **581-423** Harvest Acres= **57.5**



UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-423 **Planned Acres:** 111 **Harvest Acres:** 58 **Estimated Volume:** 1450 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-105 **Logging systems:** HE **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock-spruce **ASPECT:** W to NW
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 7 **Medium:** 32 **High:** 19
SCENERY: Managed Viewshed: Luck Lake Boat Launch **VQO:** Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 3 **Class IV Streams:** 4
SOILS: Type: 46 ac 32CDX, 39 ac 351DE, 4 ac 14DFX **Slopes Greater Than 72%:** 2 **Site Index:** 46 ac 80, 39 ac 100, 4 ac 70 (Farr, 50 yr. base by soils)

Soils Input: Hemlock-spruce-blueberry and cedar-hemlock-blueberry-skunk cabbage stands. About 10 acres of forested wetlands just south of the largest water quality stream mid unit. Small area of non-forested bog in the forested wetland. Slopes less than 70 percent throughout the unit., with one 2-acre portion on slopes over 72%. Small area of moderately well developed karst just north of the largest water quality stream mid-unit. Landslide potential is high in the southern and eastern ends of the unit (BMP 13.5). Partial suspension with retention trees around the stream, in the wetland, and around the more dominant karst features will meet soil resource objectives (BMP 13.9 and 12.5). Opportunities for shovel yarding exist on slopes less than 20 percent in the northern end of the unit and on benches in the middle portion of the unit (BMP 13.9). Riparian areas occur below the slope-break on the larger middle stream and the north boundary stream (BMP 12.6). See Fish/Watershed section for streamcourse protection needs (BMP 12.6a and 13.16). Windthrow potential of residual timber is a concern along the upper elevations in this unit.

Timber Input: Helicopter yard entire unit.

Engineering Input: Accessed by FDR 3030110 and FDR 3030118. See attached road cards in Appendix C.

Fish/Watershed Input: Three Class III O/W streams found mid-unit requiring a slope-break buffer and reasonable assurance of windfirmness buffer. Northern most stream is a karst channel and for 200 ft. water appears to run subsurface; the flagged reach serves as an overflow channel when the subsurface system is full. Two Class IV, Green/White streams becoming the Class III streams. One Class IV, Green/White stream located in the south end of the unit. One Class IV, Orange/White stream located along the northern unit tip. Apply BMP's 12.6 & 12.6a, 13.9, 13.10, 13.11, 13.12, 13.16, 14.3, 14.5, and 14.7.

Wildlife Input: Moderate wildlife use noted during silvicultural exam. NOGO surveys completed: 4/10/97, 4/28/97, 6/30/99, 7/7/99. NOGO behavior observed on 6/29/99 indicates possible nest site in vicinity. Defer harvest of entire unit until NOGO nest is located, or it is determined that no nest is in the vicinity. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

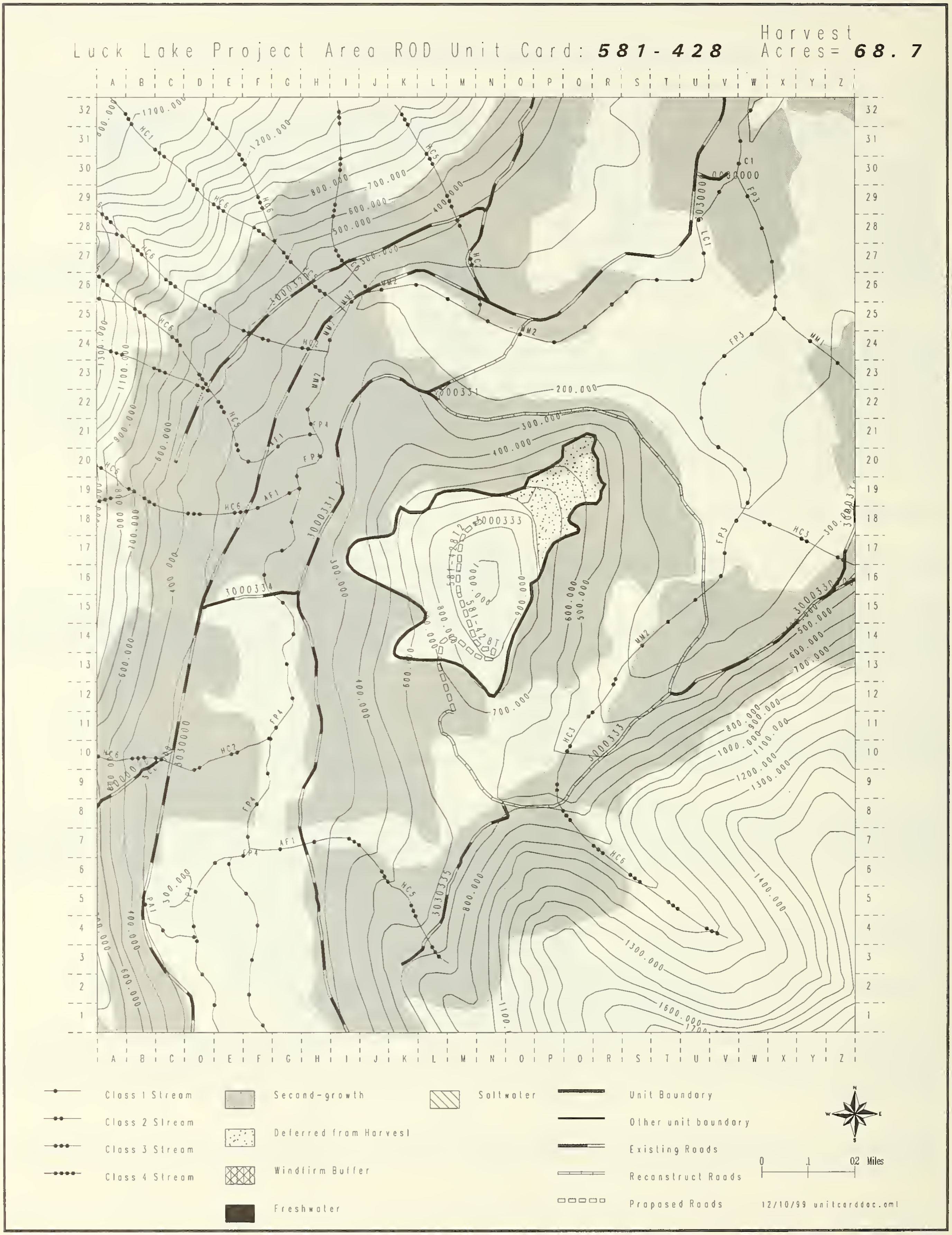
Recreation/Scenery Input: Design tree clumps and skyline corridors (if used) to minimize or eliminate the appearance of straight lines or geometric shapes. Disperse openings equally throughout unit by selecting individual trees by diameter or small clumps of trees. Leave 50% original stand canopy closure, retaining an average canopy closure of at least 30%. Minimize openings in areas with high windthrow potential. Adjacent harvest impacts have pushed this viewshed to limits of acceptable change; consequently, minimize any additional visible impacts created by this harvest unit and road system. No established recreation use

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: The proposed harvest unit is only partially atop carbonate. The areas of intense, or highly vulnerable karst resources lie well outside the harvest unit. There are areas of deep epikarst, shallow soils and at least five significant karst features in this area. The northern most of these features is at the beginning of the stream buffer shown in the northern most portion of the harvest unit. The harvest boundary has been moved to the ridge top to the southwest to avoid disturbance upslope of this feature.

Silviculture Input: Approximately 53 acres have been deferred this entry due to various resource concerns. Harvest the remainder of the planned unit using two-aged harvest with reserves, retaining all hemlock 25 inches dbh and greater.



Luck Lake Project Area ROD Unit Card: 581-428
Harvest Acres= 68.7
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 .02 Miles
12/10/99 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-428 **Planned Acres:** 87 **Harvest Acres:** 69 **Estimated Volume:** 1597 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-108 **Logging systems:** RS **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock-spruce **ASPECT:** SW to N to NE
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 4 **Medium:** 37 **High:** 27
SCENERY: Managed Viewshed: Luck Lake Boat Launch **VQO:** Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 0 **Class IV Streams:** 0
SOILS: Type: 40 ac 351DE, 32 ac 320CD, 13 ac 220C **Slopes Greater Than 72%:** 12 **Site Index:** 40 ac 100, 32 ac 65, 13 ac 40 (Farr, 50 yr. base by soils)

Soils Input: Hemlock-blueberry and cedar-hemlock-blueberry stands on slopes up to 120 percent. About 12 acres of slopes over 72 percent occur in two locations in the unit. About 10 acres of 80 to 85 percent slopes occur in the west end of the unit on smooth slopes. About 2 acres of cliffy 100 percent slopes occur along the southeast side of the unit. Thin McGilvery-like soils occur around the cliffs in the southeast side of the unit. Windthrow along the western unit boundary is a concern. A combination of partial suspension and reserve tree placement will meet soil resource objectives (BMP's 13.5 and 13.9). A small non-forested bog and forested wetland (cedar-hemlock-blueberry-skunk cabbage) occurs in the northeastern part of the unit. Reserve trees and partial suspension around the bog will meet resource concerns (BMP 12.5 & 13.9). Unit 428 was reconfigured following reconnaissance to avoid cliffs on north side and reduce windthrow potential (BMP 13.2).

Timber Input: Running Skyline logging to continuous landing.

Engineering Input: Accessed by FDR 3000333. See attached road card in Appendix C.

Fish/Watershed Input: No water quality or fisheries concerns. Apply BMP's 13.9, 13.10, 13.11, 13.12 and 13.16, 14.3, 14.5 and 14.7.

Wildlife Input: Moderate to high wildlife use noted during silvicultural exam. NOGO surveys completed: 4/4/97, 6/30/98. Implement marten and goshawk S&G's to retain an average => 30% canopy closure

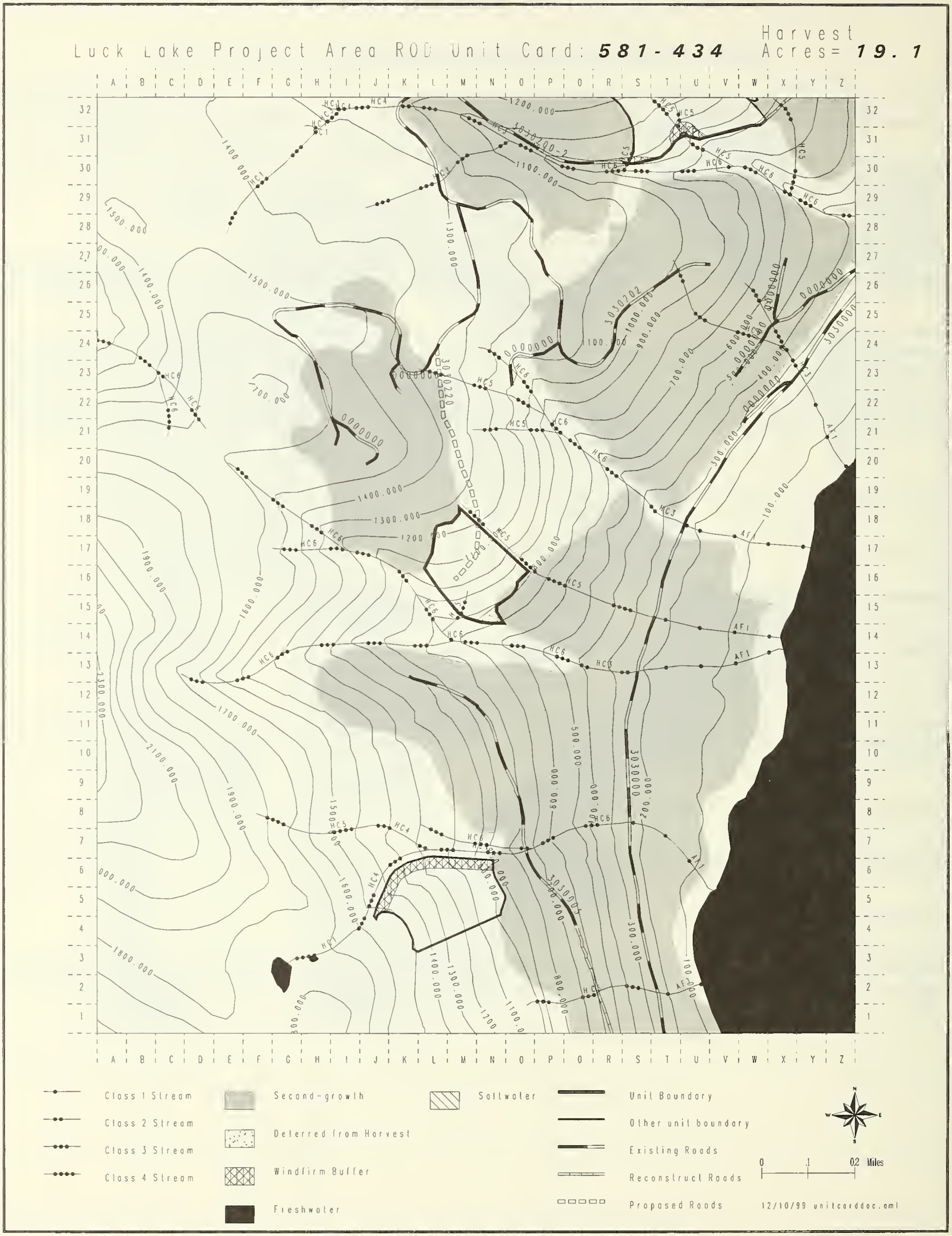
Recreation/Scenery Input: Design tree clumps and skyline corridors (if used) to minimize or eliminate the appearance of straight lines or geometric shapes. Adjacent harvest impacts have pushed this viewshed to limits of acceptable change; consequently, minimize any additional visible impacts created by this harvest unit and road system. No established recreation use.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: Approximately 18 acres has been deferred from harvest this entry due to various resource concerns. Harvest the remaining area using two-aged harvest with reserves, retaining western redcedar 38 inches and greater, redcedar 18 inches dbh and less along with hemlock in the 20 to 24 inch dbh classes.


Luck Lake Project Area ROD Unit Card: 581-434
Harvest Acres= 19.1
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 0.2 Miles
12/10/99 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-434 **Planned Acres:** 23 **Harvest Acres:** 19 **Estimated Volume:** 416 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-213 **Logging systems:** RS **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock-spruce **ASPECT:** SE
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 5 **High:** 13
SCENERY: Managed Viewshed: Luck Lake Boat Launch **VQO:** Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 2 **Class IV Streams:** 2
SOILS: Type: 31CDX (mapped) **Slopes Greater Than 72%:** 0 **Site Index:** 80 (mapped by soils), 90 to 100 observed (Farr, 50 yr. base, by soils)

Soils Input: Cedar-hemlock-oak fern stands on 40 to 65 percent slopes. Soils are moderately well drained and belong to the Karta soil series. Partial suspension will meet soil resource objectives (BMP 13.9). An 80-foot deep V-notch has a riparian area that extends to the slope-break. The riparian area is entirely within the no-cut buffer (BMP 12.6). See Fish/Watershed section for buffers and streamcourse protection (BMP's 12.6a and 13.16).

Timber Input: Recommend running skyline logging.

Engineering Input: Accessed by FDR 3030220. See attached road card in Appendix C.

Fish/Watershed Input: Two Class III, Orange/White, HC6 V-notches found outside the south and west unit boundaries requiring a slope-break buffers and reasonable assurance of windfirm buffers. One Class IV, Green/White, HC5 found flowing into the south stream near the confluence of the two Class III streams. One Class IV, G/W stream located along/outside the NE unit boundary. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16.

Wildlife Input: Moderate to high wildlife use noted during silvicultural exam. Grouse noted outside unit in clearcut to the north. NOGO surveys completed: 4/7/97. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

Recreation/Scenery Input: Design tree clumps and skyline corridors (if used) to minimize or eliminate the appearance of straight lines or geometric shapes. Adjacent harvest impacts have pushed this viewshed to limits of acceptable change; consequently, minimize any additional visible impacts created by this harvest unit and road system. No established recreation use.

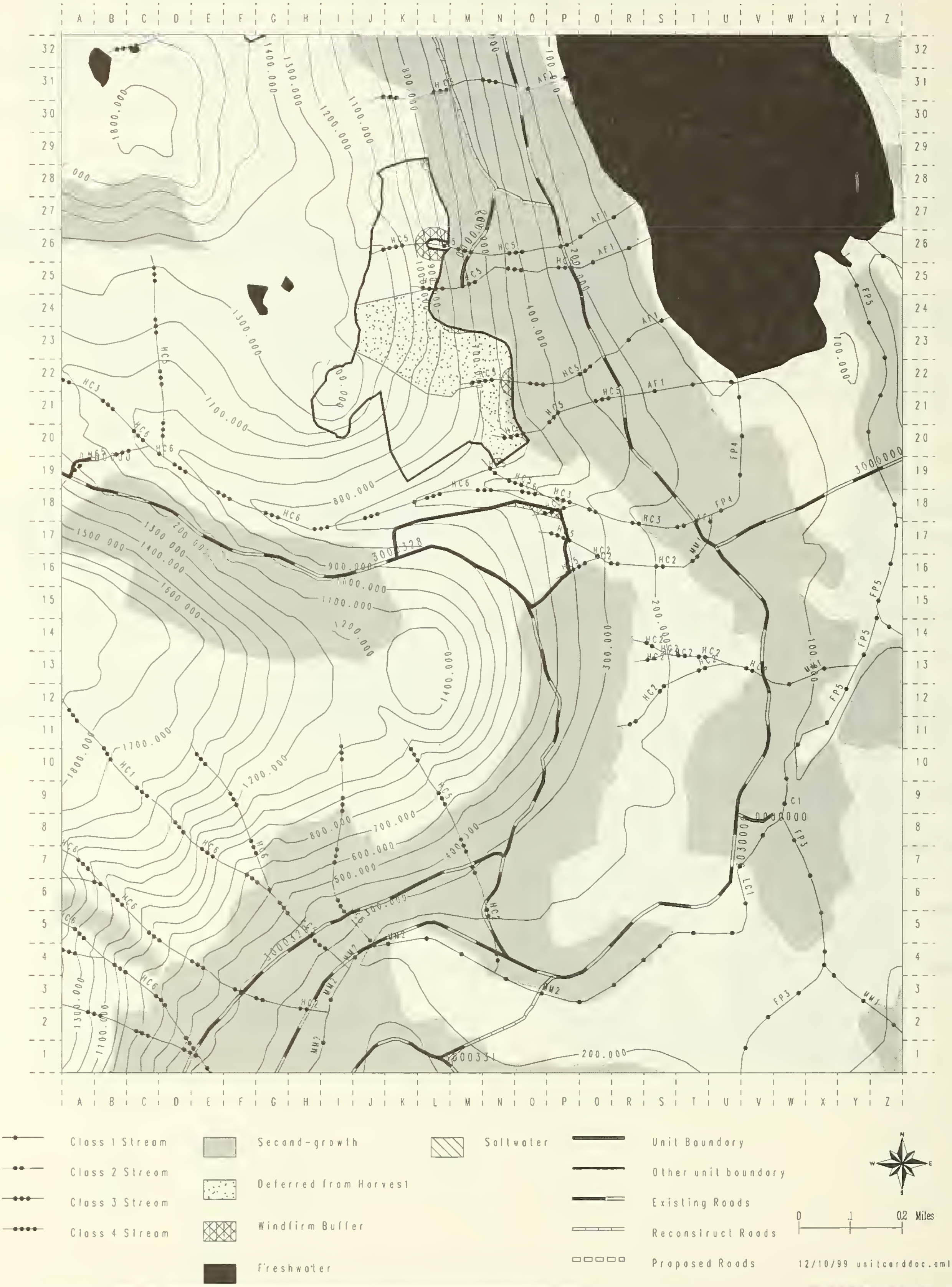
Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: Harvest the planned unit using two-aged harvest with reserves, retaining all hemlock.

Luck Lake Project Area ROD Unit Card: **581-435** Harvest Acres= **23.8**



UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-435 **Planned Acres:** 24 **Harvest Acres:** 24 **Estimated Volume:** 446 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-105 **Logging systems:** RS **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock **ASPECT:** E
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 0 **High:** 24
SCENERY: Managed Viewshed: Not seen **VQO:** Maximum Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 1 **Class IV Streams:** 3
SOILS: **Type:** 3 ac 31CDX, 21 ac 331CD **Slopes Greater Than 72%:** 0 **Site Index:** 3 ac 80, 21 ac 90 (Farr, 50 yr. base by soils)

Soils Input: Hemlock-blueberry-devil's club on slopes less than 70 percent. Cedar-hemlock-blueberry-skunk cabbage forested wetland in the east end of the unit. Partial suspension will meet resource protection needs (BMP 12.5 & 13.9). A large V-notch occurs along the north side of the unit and has a riparian area that extends to the slope-break. The riparian area is entirely within the buffer (BMP 12.6). See Fish/Watershed section for streamcourse protection needs (BMP's 12.6a and 13.16). Unit 435 was reconfigured following recon to avoid stream buffers and lower volume stands on wetlands (BMP 13.2).

Timber Input: Recommend running skyline logging system.

Engineering Input: Accessed by FDR 3000328. See attached road card in Appendix C.

Fish/Watershed Input: One Class III, O/W stream located outside the north unit boundary requiring a slope-break buffer and reasonable assurance of a windfirm buffer. One G/W stream located mid-north boundary flowing into the Class III stream. Two G/W streams located in the east unit portion flowing east out of the unit into a Class II stream. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16, 14.3, 14.5 and 14.7.

Wildlife Input: Moderate wildlife use & value per silvicultural exam observations. NOGO surveys completed: 4/4/97, 4/7/97, 4/28/98. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

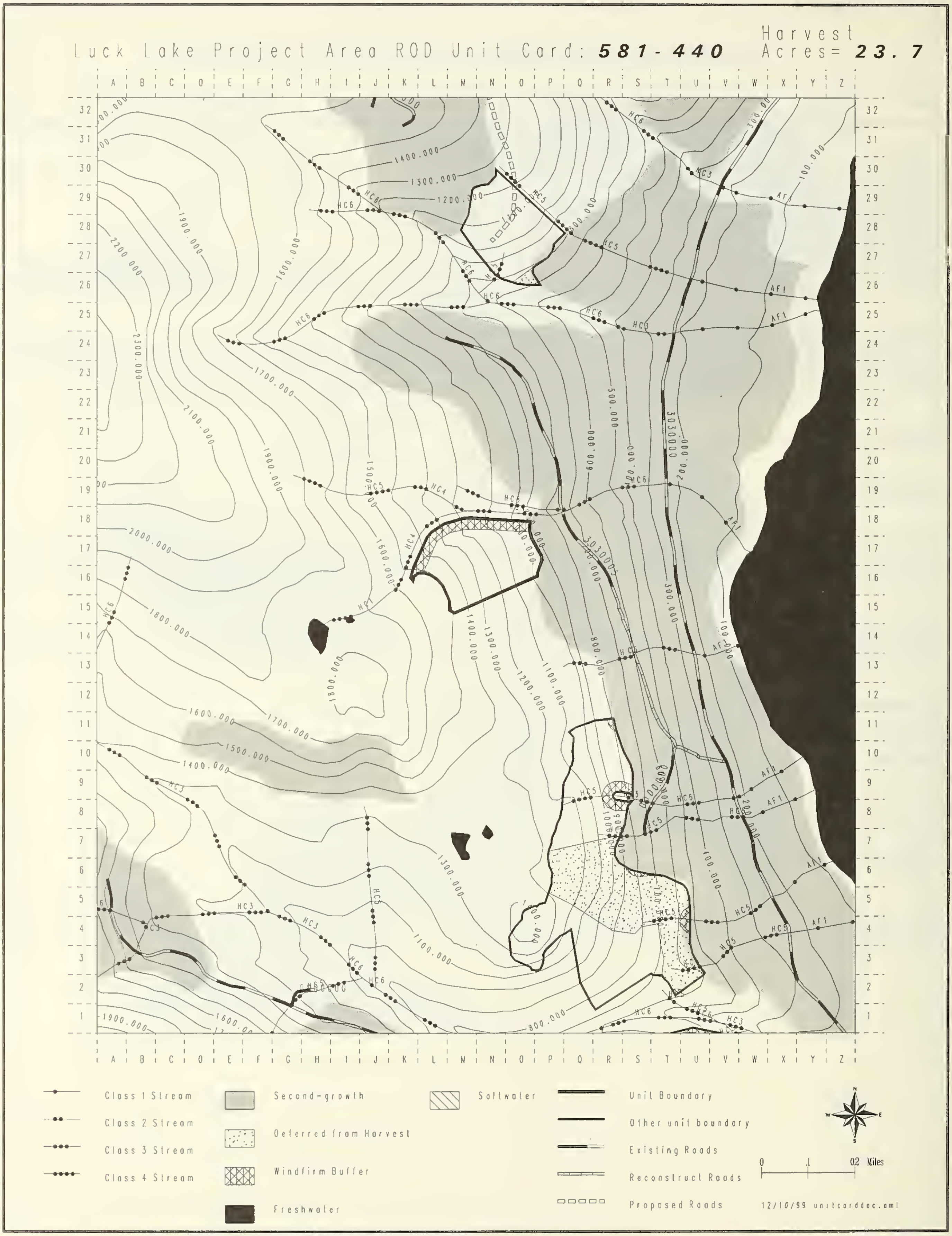
Recreation/Scenery Input: Unit is screened by topography. No established recreation.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit is outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: Harvest this unit using two-aged harvest with reserves, retaining western redcedar 38 inches dbh and greater, hemlock 20 inches dbh and greater and yellowcedar in the 16 to 18 inch dbh classes.



Luck Lake Project Area ROD Unit Card: 581-440
Harvest Acres= 23.7
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 .02 Miles
12/10/99 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-440 **Planned Acres:** 35 **Harvest Acres:** 24 **Estimated Volume:** 562 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-212 **Logging systems:** HE **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: hemlock **ASPECT:** E
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 7 **High:** 17
SCENERY: Managed Viewshed: Luck Lake Boat Launch/Alaska Marine Highway **VQO:** Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 3 **Class IV Streams:** 2
SOILS: Type: 10 ac 550CE, 10 ac 351DE, 4 ac 32CDX **Slopes Greater Than 72%:** 0 **Site Index:** 10 ac 70, 10 ac 100, 4 ac 80 (Farr, 50 yr. base by soils)

Soils Input: Cedar-hemlock-blueberry stands on somewhat poorly drained soils. Forested wetlands occupy 15 percent of the unit and include deer cabbage and marsh marigold in the understory. Slopes range up to 70 percent. Unit 440 was reconfigured following reconnaissance to avoid slopes over 72 percent and two water quality streams (BMP 13.2). Full suspension is required on a small portion of the steeper slopes. Partial suspension on the rest of the unit (BMP 12.5, 13.9). See Fish/Watershed section for streamcourse protection requirements (BMP 12.6a and 13.16). Add one water quality stream along the south unit boundary for directional felling and split yarding (BMP 13.16).

Timber Input: Recommend helicopter yarding entire unit.

Engineering Input: No concerns.

Fish/Watershed Input: One Class III, O/W, HC6 V-notch found along north unit boundary requiring a slope-break buffer and reasonable assurance of a windfirm. One Class IV, G/W, HC5, that becomes Class III, O/W, HC5 as it flows into the northern stream, found requiring a slope-break buffer and reasonable assurance of a windfirm buffer. One Class IV, G/W, HC5 found north of unit that flows into north boundary stream ~mid-north boundary. One Class III, O/W, HC6 stream identified outside the proposed north unit boundary. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16, 14.3 and 14.6.

Wildlife Input: Moderate wildlife use noted during silvicultural exam. Sharp-shinned hawk observed flying through on 10/30/97 by silviculture crew. NOGO surveys completed: 4/07/97. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

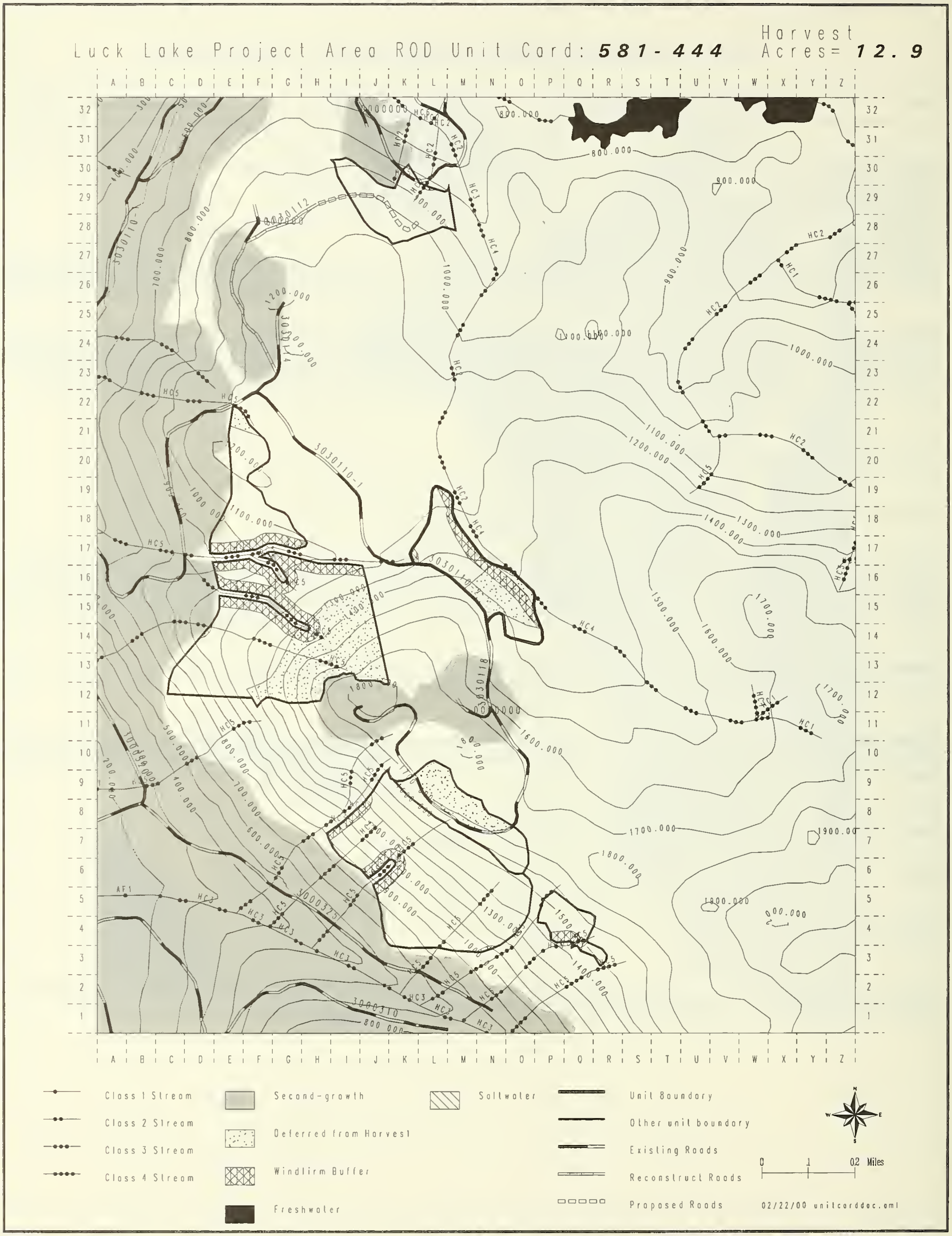
Recreation/Scenery Input: Design tree clumps to minimize or eliminate the appearance of straight lines or geometric shapes. Adjacent harvest impacts have pushed this viewshed to limits of acceptable change; consequently, minimize any additional visible impacts created by this harvest unit and road system. No established recreation use.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: Approximately 11 acres has been deferred from harvest this entry due to various resource concerns. Harvest the remaining portions of the planned unit using two-aged harvest with reserves, retaining all hemlock 26 inches dbh and greater.


Luck Lake Project Area ROD Unit Card: 581-444
Harvest Acres= 12.9
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 0.2 Miles
02/22/00 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-444 **Planned Acres:** 21 **Harvest Acres:** 13 **Estimated Volume:** 167 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-6 **Logging systems:** RS **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock-spruce **ASPECT:** NE
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 5 **Medium:** 5 **High:** 3
SCENERY: Managed Viewshed: Alaska Marine Highway **VQO:** Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 1 **Class IV Streams:** 0
SOILS: Type: 10 ac 32CDX, 5 ac 550CE, 6 ac 351DE **Slopes Greater Than 72%:** 0 **Site Index:** 10 ac 80, 5 ac 70, 6 ac 100 (Farr, 50 yr. base by soils)

Soils Input: Hemlock-blueberry and cedar-hemlock-blueberry skunk cabbage stands. Forested wetlands in the east and west end of the unit. Most of the unit is upland. Slopes are less than 35 percent throughout the unit. Partial suspension required throughout the unit to protect resources (BMP 12.5 and 13.9). The stream along the northeast boundary has a riparian area that extends to the slope-break. The entire riparian area is within the buffer (BMP 12.6). See Fish/Watershed section for streamcourse protection (BMP 12.6a and 13.16).

Timber Input: Recommend running skyline logging to existing road.

Engineering Input: Accessed by FDR 3030110. See attached road card in Appendix C.

Fish/Watershed Input: One Class III, O/W, HC4 found along east unit boundary requiring a slope-break buffer and a reasonable assurance of a windfirm buffer. Fisheries recon found no other streams within this unit. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16, 14.3 and 14.5.

Wildlife Input: Moderate wildlife use and value noted during silvicultural exam. NOGO surveys completed 4/10/97, 7/3/9, 6/30/99, 7/7/99. NOGO behavior observed on 6/29/99 indicates possible nest site in vicinity. Defer harvest of entire unit until NOGO nest is located, or it is determined that no nest is in the vicinity7. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

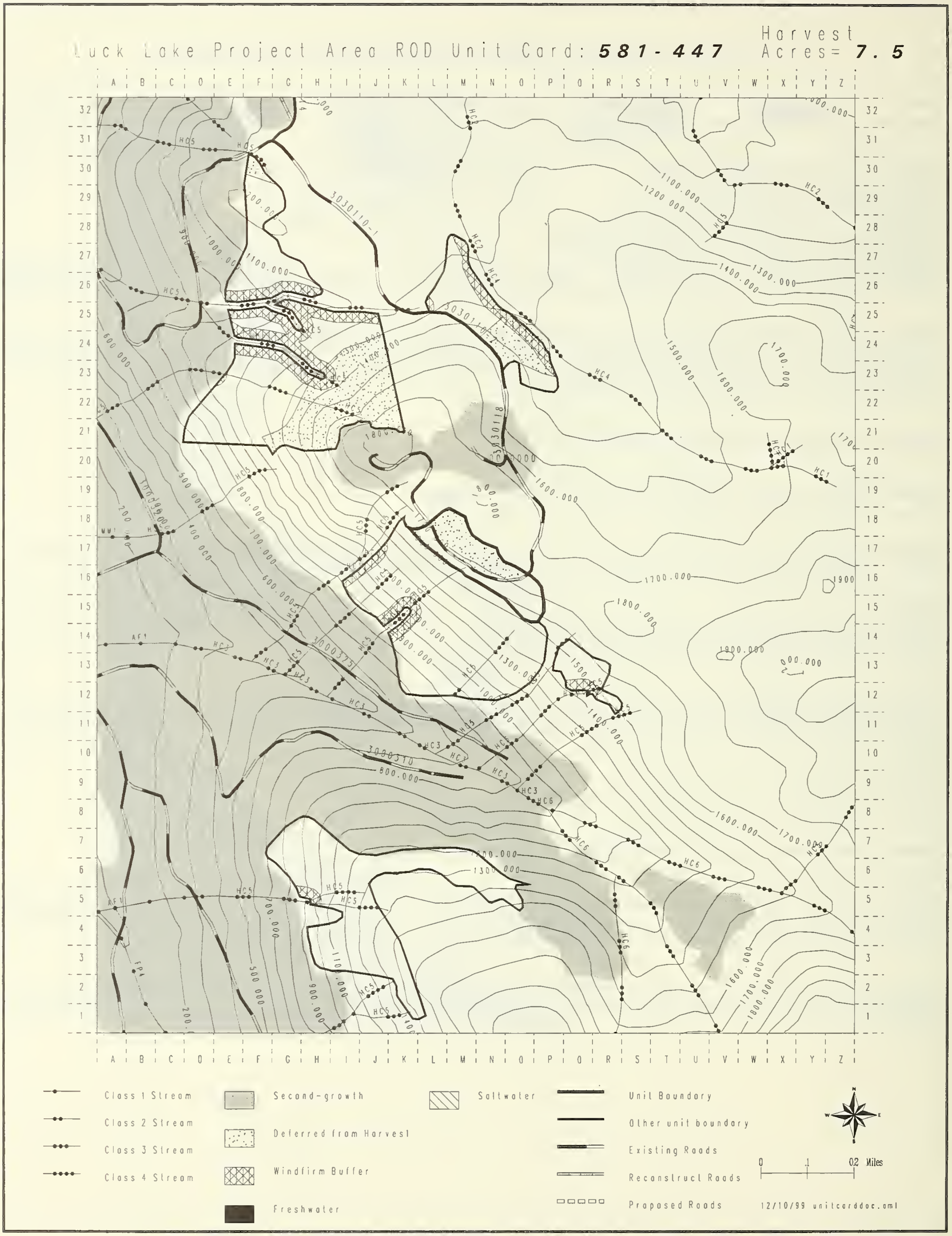
Recreation/Scenery Input: Design tree clumps and skyline corridors (if used) to minimize or eliminate the appearance of straight lines or geometric shapes. Adjacent harvest impacts have pushed this viewshed to limits of acceptable change; consequently, minimize any additional visible impacts created by this harvest unit and road system. No established recreation use.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: The northern two-thirds of the harvest unit are atop carbonate. There is a significant karst feature located adjacent to the existing road in the middle of the southwestern unit boundary. A row of collapse features curves through the lower third of the unit. These areas are within the proposed reserve areas of this unit. The reminder of the unit is underlain by low to moderate vulnerability karst. Partial suspension is required.

Silviculture Input: Approximately 8 acres have been deferred from harvest this entry due to stream and karst protection concerns. Harvest the remaining portions of the planned unit using two-aged harvest with reserves, retaining all hemlock 20 inches dbh and greater along with yellowcedar in the 9 to 12 inch dbh classes.


Luck Lake Project Area ROD Unit Card: 581-447
Harvest Acres= 7.5
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 0.2 Miles
12/10/99 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-447 **Planned Acres:** 16 **Harvest Acres:** 8 **Estimated Volume:** 206 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-7 **Logging systems:** HE **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock-spruce **ASPECT:** SW
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 6 **High:** 0
SCENERY: Managed Viewshed: Not Seen **VQO:** Maximum Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 0 **Class IV Streams:** 2
SOILS: **Type:** 14 ac 550CE, 2 ac 34DFX **Slopes Greater Than 72%:** 0 **Site Index:** 70 (Farr, 50 yr. base by soils)

Soils Input: Hemlock-blueberry and cedar-hemlock-blueberry stands on shallow well drained McGilvery and Tolstoi soils. Unit 447 was reconfigured to avoid slopes over 72 percent (BMP 13.2). Landslide potential is high. Partial suspension will meet resource protection needs (BMP's 13.5, and 13.9). See Fish/Watershed section for streamcourse protection requirements (BMP 13.16).

Timber Input: Blind leads possible due to cliffs and benches pending final logging system/access location. Possible to combine with helicopter unit to the southwest to form one logical unit.

Engineering Input: No concerns.

Fish/Watershed Input: One Class IV, G/W, HC5 found along the northwest unit boundary. One Class IV, G/W, HC5 found ~mid-unit that becomes a Class III, O/W, HC5 just below the proposed southwest unit boundary. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16, 14.3 and 14.5.

Wildlife Input: Moderate wildlife use and a small avian nest in lower branches noted during silvicultural exam. NOGO surveys completed, 4/15/97, 7/3/97. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

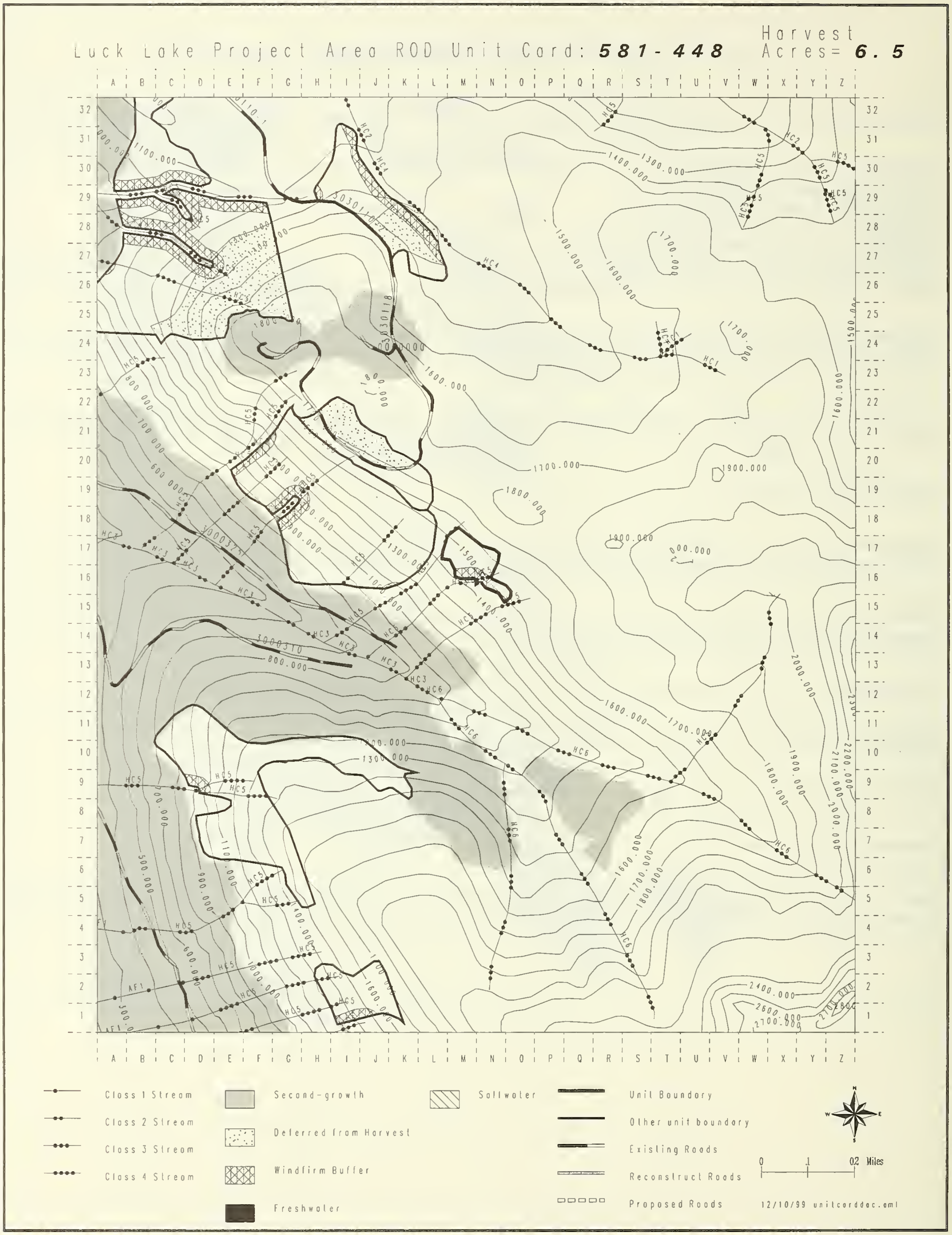
Recreation/Scenery Input: No concerns as planned.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: Approximately 8 acres has been deferred from harvest this entry due to various resource concerns. Harvest the remaining portion of this planned unit using two-aged harvest with reserves, retaining hemlocks in the 20 to 24 inch dbh classes.


Luck Lake Project Area ROD Unit Card: 581-448
Harvest Acres= 6.5
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 0.2 Miles
12/10/99 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-448 **Planned Acres:** 7 **Harvest Acres:** 7 **Estimated Volume:** 51 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-7 **Logging systems:** HE **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock-spruce **ASPECT:** SW
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 7 **High:** 0
SCENERY: Managed Viewshed: Not Seen **VQO:** Maximum Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 0 **Class IV Streams:** 3
SOILS: **Type:** 550CE **Slopes Greater Than 72%:** 0 **Site Index:** 70 (Farr, 50 yr. base by soils)

Soils Input: Cedar-hemlock-blueberry stands throughout on slopes of 50 to 70 percent. Skunk cabbage in the understory in the lower part of the unit. Forested wetlands occupy 3 acres in the lower part of the unit. Partial suspension will meet soil and wetland protection requirements (BMP 12.5 & 13.9). A very small riparian area is associated with the southeast boundary stream. The entire riparian area is within the buffer (BMP 12.6). See Fish/Watershed section for streamcourse protection requirements (BMP 12.6a and 13.16).

Timber Input: Unit 581-448 is planned to harvest 51 MBF of timber from 7 acres utilizing a helicopter logging system. The wood will be flown to an existing road located approximately 0.5 mile to the west of the unit.

Engineering Input: Logs will be flown to FDR 3030118. See attached road card in Appendix C.

Fish/Watershed Input: One Class IV, O/W, HC5 found outside the southeast portion of the unit. One Class IV, G/W, HC5 found along the northwest unit boundary becoming Class IV, O/W below the unit. One small Class IV, G/W, HC5 found in the mid-south portion of the unit. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16.

Wildlife Input: Moderate wildlife use noted during silvicultural exam. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

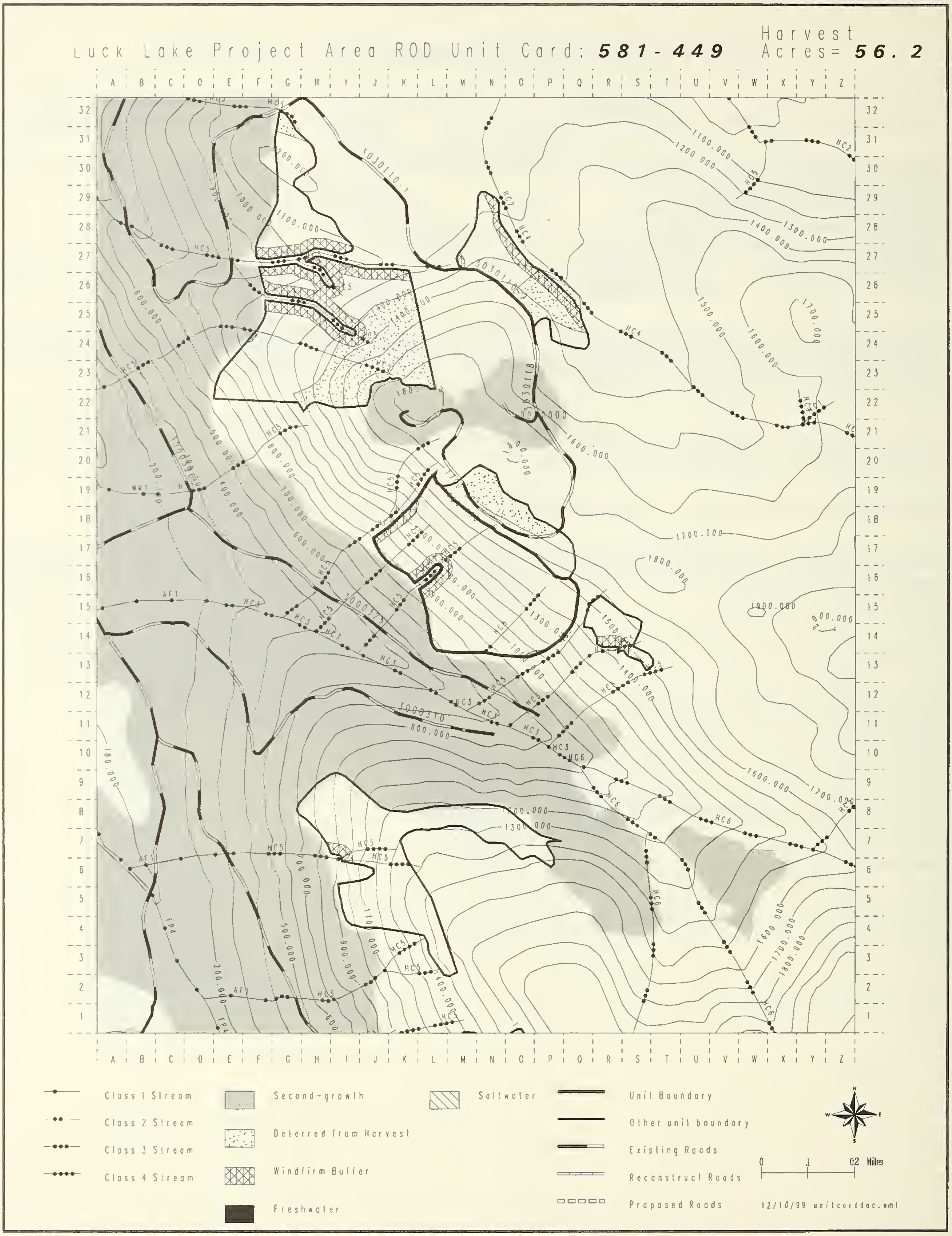
Recreation/Scenery Input: No concerns as planned.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability area for cultural resources.

Geological Input: No concerns.

Silviculture Input: Harvest using two-aged harvest with reserves, by retaining all hemlock.



Luck Lake Project Area ROD Unit Card: 581-449
Harvest Acres= 56.2
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 .02 Miles
12/10/99 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-449 **Planned Acres:** 60 **Harvest Acres:** 56 **Estimated Volume:** 834 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-7 **Logging systems:** HE **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock **ASPECT:**
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 10 **High:** 46
SCENERY: Managed Viewshed: Not Seen **VQO:** Maximum Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 2 **Class IV Streams:** 6
SOILS: **Type:** 20 ac 351DE, 40 ac 34DFX **Slopes Greater Than 72%:** 4 **Site Index:** 20 ac 100, 40 ac 70 (Farr, 50 yr. base by soils)

Soils Input: Cedar-hemlock-oak fern stands throughout unit. Soils are shallow to bedrock and similar to the Tolstoi and McGilvery soil series. Slopes are typically 60 to 80 percent but range up to 130 percent around the cliffs. Cliffs up to 40 feet high are common around 1,400 feet elevation. Approximately 4 acres on slopes over 72 percent. Slopes over 72 percent are scattered in short steep pitches around the cliffs and at lower elevations in the unit. Full suspension is required to meet resource objectives. Timber retention in small isolated areas along streamcourses in the southwestern part of the unit and below some of the cliffs is also required to meet soil protection objectives (BMP 13.5, and 13.9). Windthrow is a concern in most of the unit. Three water quality streams have identifiable riparian areas below the slope-break. All riparian areas will be within stream buffers (BMP 12.6). See Fish/Watershed section for streamcourse protection measures (BMP 12.6a and 13.16).

Timber Input: Blind leads possible due to small cliffs near top of unit. Recommend helicopter yarding.

Engineering Input: No concerns.

Fish/Watershed Input: One Class III, O/W, HC5 V-notch found along the north unit boundary requiring a slope-break buffer and reasonable assurance of a windfirm buffer; one Class IV, G/W flowing into the Class III. One Class III, O/W, HC5 located lower ~mid-unit requiring a slope-break buffer and reasonable assurance of a windfirm buffer; one Class IV, G/W flowing into the Class III. One Class IV, O/W, HC5 found outside the southeast unit boundary. One Class IV, O/W, HC5 found flowing through the SE corner; one Class IV, G/W flows into the O/W. One Class IV, O/W located outside the SE boundary. One Class IV, G/W found between the two Class III streams in the north unit section. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16.

Wildlife Input: Moderate wildlife use noted during silvicultural exam. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

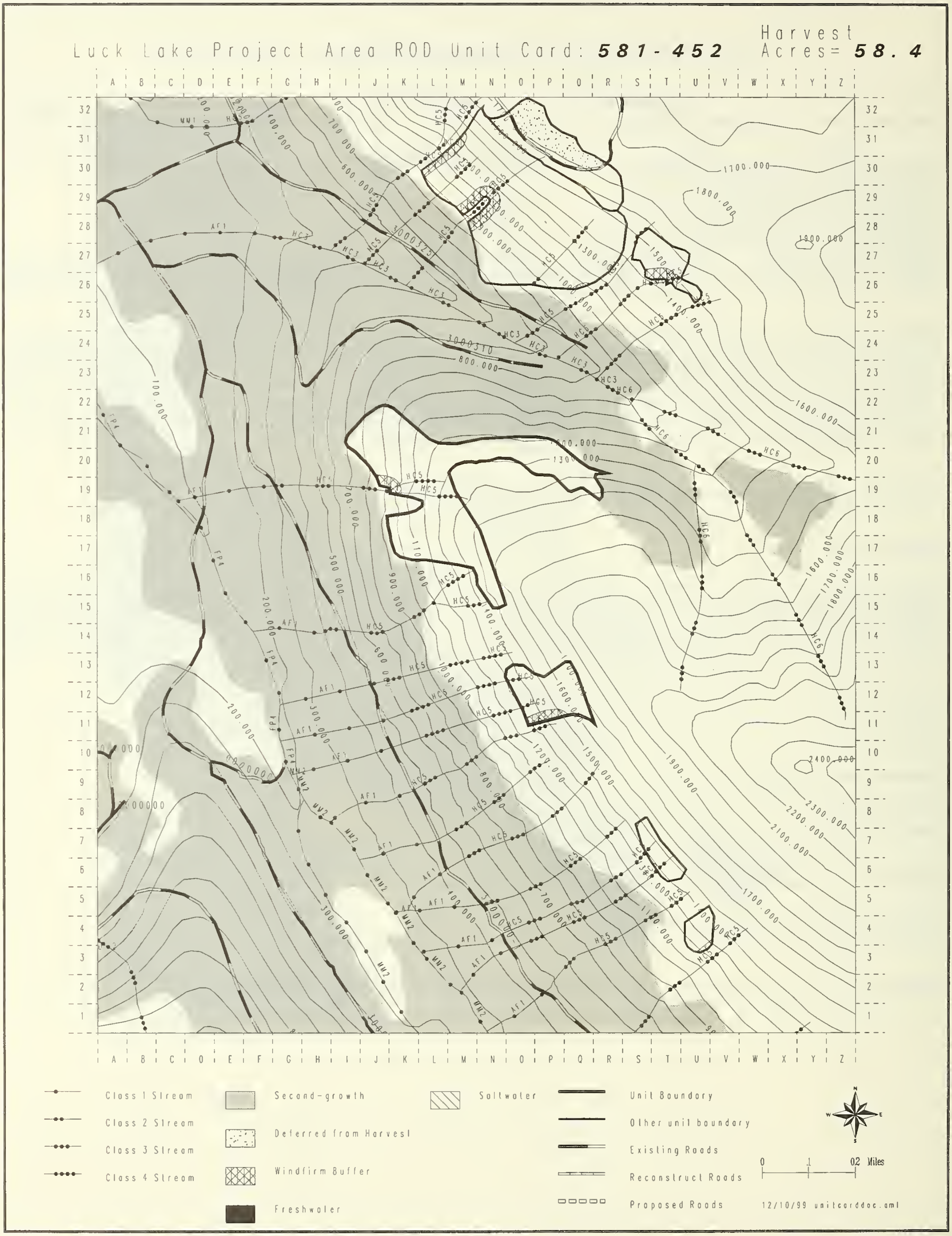
Recreation/Scenery Input: No concerns as planned.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No known karst resources within the unit.

Silviculture Input: Harvest the proposed unit using two-aged harvest with reserves, retaining all hemlock. Four acres deferred within stream buffers.



Luck Lake Project Area ROD Unit Card: 581-452
Harvest Acres= 58.4
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 .02 Miles
12/10/99 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-452 **Planned Acres:** 91 **Harvest Acres:** 58 **Estimated Volume:** 876 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-8 **Logging systems:** HE **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock **ASPECT:** SW
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 0 **High:** 57
SCENERY: Managed Viewshed: Not Seen **VQO:** Maximum Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 2 **Class IV Streams:** 7
SOILS: **Type:** 351DE **Slopes Greater Than 72%:** 8 **Site Index:** 100 (Farr, 50 yr. base by soils)

Soils Input: Cedar-hemlock-oak fern stands on slopes less than 90 percent gradient. A fringe of forested wetlands occurs along the east unit boundary. Most slopes over 72 percent were included in proposed reserve areas following unit reconnaissance (BMP 13.5). Only short pitches remain. Full suspension is required for soil resource protection (BMP 13.5 and 13.9). Small riparian areas occur below the slope break on the larger streams. All riparian areas are within the no-cut buffer (BMP 12.6). See Fish/Watershed section for streamcourse protection (BMP 13. 16 and 12.6a).

Timber Input: Helicopter log to existing road to the east.

Engineering Input: No concerns.

Fish/Watershed Input: One Class III, O/W, HC5 stream flows into the clearcut (west boundary) requiring a slope-break buffer and reasonable assurance of a windfirm buffer; one Class IV, G/W flows into the Class III- these streams now located south of the northern polygon. One Class IV, O/W, HC5 stream found along the south unit boundary of the south polygon. Three Class IV, G/W streams located between the south O/W stream and the Class III mid-unit. Two Class IV, G/W, HC5 streams in north polygon become an O/W Class III as the confluence leaves the unit. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16.

Wildlife Input: Moderate wildlife use noted during silvicultural exam. NOGO surveys completed: 3/31/97. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

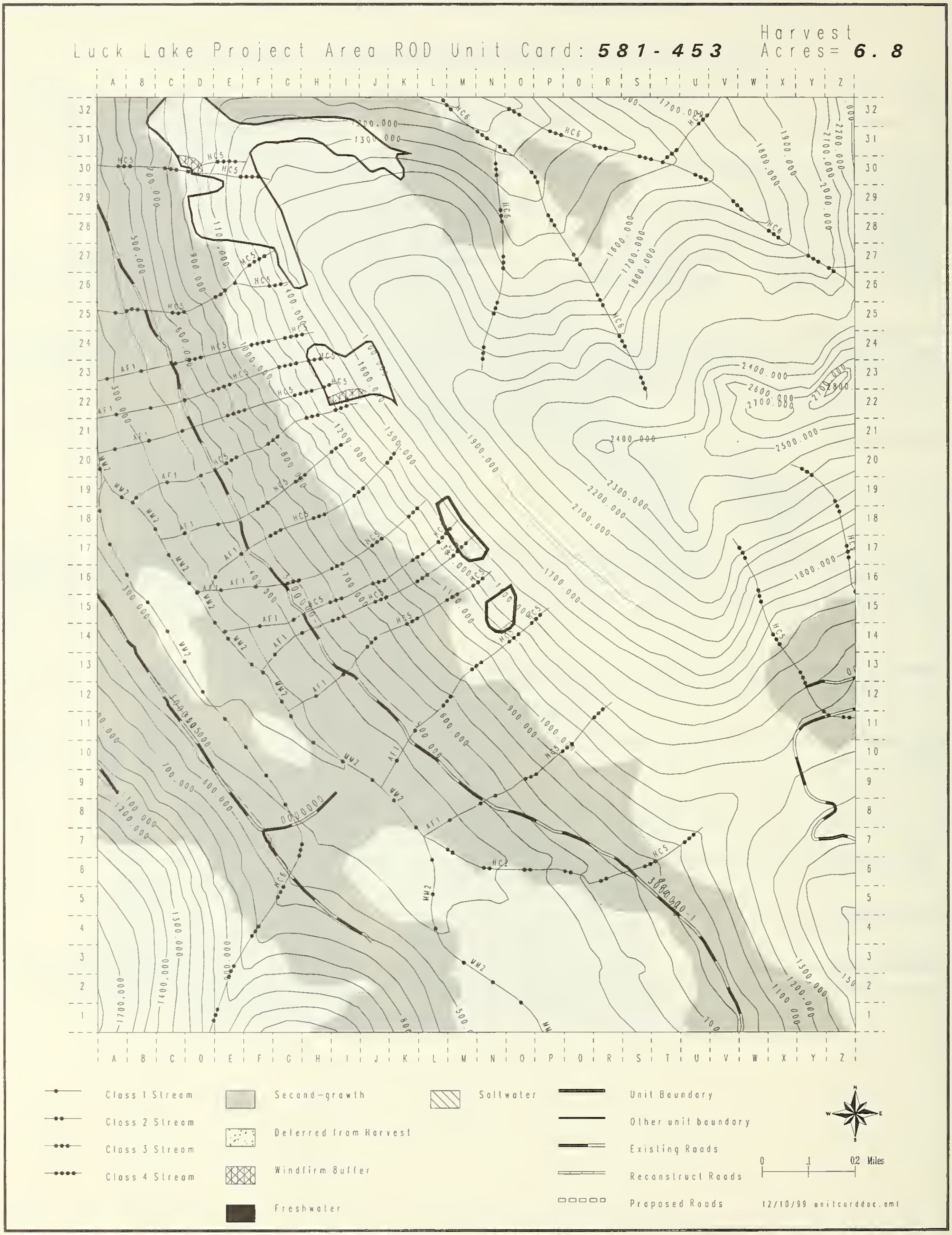
Recreation/Scenery Input: Unit is obliquely visible from Luck Lake in the middle ground. Ridgeline partially screens the unit; partial harvest will mitigate impacts.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit is outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: Approximately 33 acres has been deferred from harvest this entry due to various resource concerns. Harvest the remaining portions of the planned unit using two-aged harvest with reserves retaining hemlock in the 20 to 22 inch dbh classes along with all hemlock 34 inches dbh and greater.


Luck Lake Project Area ROD Unit Card: 581-453
Harvest Acres= 6.8
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 .02 Miles
12/10/99 unitcarddoc.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-453 **Planned Acres:** 26 **Harvest Acres:** 7 **Estimated Volume:** 142 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-8 **Logging systems:** HE **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock **ASPECT:** SW
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 0 **High:** 7
SCENERY: Managed Viewshed: Not Seen **VQO:** Maximum Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 3 **Class IV Streams:** 2
SOILS: **Type:** 351DE **Slopes Greater Than 72%:** 0 **Site Index:** 100 (Farr, 50 yr. base by soils)

Soils Input: Hemlock-spruce-oak fern stands on slopes less than 72 percent gradient. Due to extremely landslide prone soils identified during unit reconnaissance, most of original unit 453 was not considered for timber harvest (BMP 13.5). Full suspension is required in portions of this unit, and helicopter logging is planned (BMP 13.9). An area below the slope-break and on the headwall of the south boundary stream is a riparian area. The riparian area is entirely with in the stream buffer or outside of the unit boundary (BMP 12.6). See Fish/Watershed section for streamcourse protection (BMP 12.6a and 13.16)

Timber Input: Much of the unit reconned is located over landslide prone soils and has been deferred. Approximately 7 acres make up a helicopter setting that we can harvest meeting soils standards and guidelines.

Engineering Input: No concerns

Fish/Watershed Input: Two Class IV, O/W, HC5 V-notches found inside the unit (mid-1/3). Two Class III, O/W, HC5 V-notches found north and south of the proposed north unit polygon requiring a slope-break buffer and reasonable assurance of a windfirm buffer. One O/W, Class III found outside the SE boundary of the southern polygon requiring a slope-break buffer and reasonable assurance of a windfirm buffer. Apply BMP's 12.6 and 12.6a, 13.9, 13.10, 13.11, 13.12 and 13.16. Unit is located upslope of O/W streams except SE boundary 3/5/98 DJL

Wildlife Input: Moderate wildlife use indicated during silvicultural exam. NOGO surveys completed: 3/31/97. Implement marten and goshawk S&G's to retain average => 30% canopy closure.

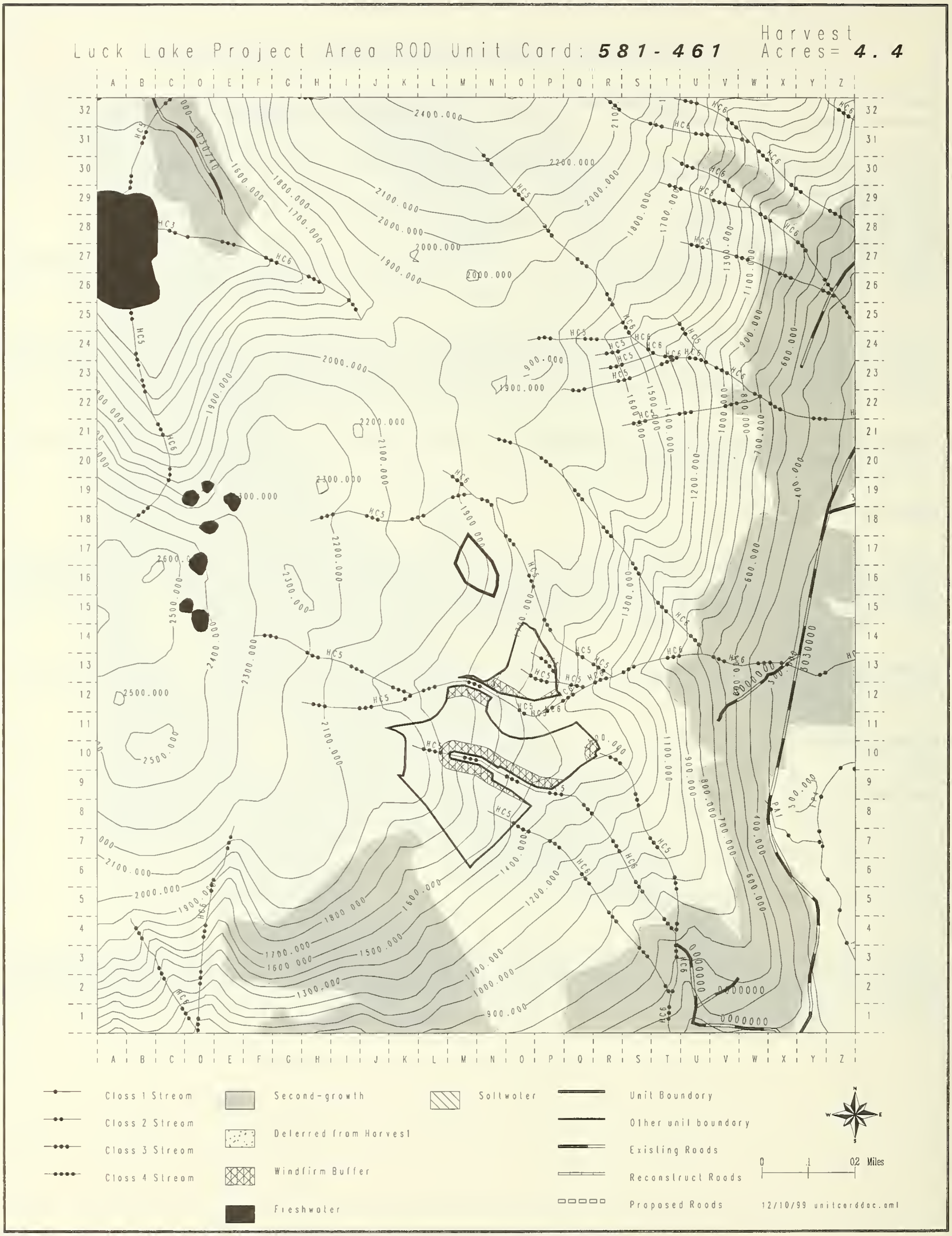
Recreation/Scenery Input: No concern as planned.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: Much of the originally proposed unit configuration will be deferred from harvest this entry due to soils concerns (approximately 18-19 acres). Two small patches remain feasible for treatment (totaling about 7 acres) where hemlock-yellowcedar predominates. Harvest the remaining portions of the planned unit configurations using two-aged harvest with reserves, retaining a minimum of 10% of the original forest structure within treated openings greater than 2 acres.



Luck Lake Project Area ROD Unit Card: 581-461
Harvest Acres= 4.4
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Second-growth
Deferred from Harvest
Windfirm Buffer
Freshwater
Saltwater
Unit Boundary
Other unit boundary
Existing Roads
Reconstruct Roads
Proposed Roads
0 .1 .2 Miles
12/10/99 unitcarddac.aml

UNIT DATA CARD AND PLANNED CONFIGURATION - LUCK LAKE ROD

Unit: 581-461 **Planned Acres:** 4 **Harvest Acres:** 4 **Estimated Volume:** 40 MBF
Silvicultural System: Two-aged Harvest w/ Reserves **Quad:** Craig D-3 NE **Photo:** 1090-209 **Logging systems:** HE **WAA Number:** 1420

PHYSICAL DESCRIPTION

(Numbers are Acres unless otherwise noted)
FOREST TYPE: cedar-hemlock **ASPECT:** E
VOLUME STRATA BREAKDOWN (Harvest Acres): **Low:** 0 **Medium:** 0 **High:** 4
SCENERY: Managed Viewshed: Alaska Marine Highway **VQO:** Modification
RECREATION: **Primary ROS Code:** Roaded Modified
NUMBER OF STREAMS: **Class I Streams:** 0 **Class II Streams:** 0 **Class III Streams:** 1 **Class IV Streams:** 0
SOILS: **Type:** 550CE **Slopes Greater Than 72%:** 0 **Site Index:** 70 (Farr, 50 yr. base, by soils)

Soils Input: Cedar-hemlock-blueberry-deer cabbage stand on slopes less than 70 percent gradient. Forested wetland in most of the unit. Full suspension is required throughout (BMP 13.5, 13.9 and 12.5). Water quality stream northeast of the unit has a riparian area below the slope-break. The riparian area is entirely outside the unit (BMP 12.6).

Timber Input: Unit 581-461 is planned to harvest 40 MBF of timber from 4 acres utilizing a helicopter logging system. The wood will be flown to the end of an existing spur road to be reconstructed approximately 1 mile to the southeast of the planned unit.

Engineering Input: No concerns.

Fish/Watershed Input: One Class III, O/W stream is located ~150 ft. east of the proposed unit boundary. Fisheries recon found no streams in this unit. Apply BMP's 13.9, 13.10, 13.11, 13.12 and 13.16.

Wildlife Input: Implement marten and goshawk S&G's to retain average => 30% canopy closure.

Recreation/Scenery Input: Design tree clumps and skyline corridors (if used) to minimize or eliminate the appearance of straight lines or geometric shapes. Adjacent harvest impacts have pushed this viewshed to limits of acceptable change; consequently, minimize any additional visible impacts created by this harvest unit and road system. No established recreation use.

Lands Input: No state/private or encumbered lands occur adjacent to unit.

Cultural Resource Input: Unit outside of high probability areas for cultural resources.

Geological Input: No concerns.

Silviculture Input: Harvest the planned unit using two-aged harvest with reserves, retaining hemlocks 22 inches dbh and greater.

Appendix 3

Road Cards

Table A3-1
Site-specific Mitigation Measures Incorporated into Road Design

Mitigation Measure	Description	Number of roads affected
Fish, Soil, Watershed		
F3	Protect local water supplies by implementing oil pollution prevention and hazardous substance spill prevention measures (BMP's 12.8 and 12.9).	2
F8	Establish timing restrictions for instream road construction activities to avoid impacts on fish populations.	11
F9	Implement measures to reduce surface erosion and drainage interruption related to transportation including water barring and cross-draining roads, using ditches and culverts to prevent water running long distances over roads, seeding and fertilizing cut and fill slopes, and locating and designing landings for good drainage and dispersion of water (BMP's 13.10, 14.3, 14.5, 14.8, 14.9, 14.11, 14.12, 14.14).	33
F10	Control access/manage road use to minimize surface erosion and sedimentation (14.22)	30
F11	Maintain road to provide for soil and water resource protection (BMP 14.20).	6
F12	Control placement of sidecast material to minimize sedimentation (BMP 14.12).	6
F13	Design road construction to minimize impacts to wetland areas when construction on such areas is unavoidable.	6
F14	Keep excavated material out of wetlands and riparian areas (BMP 12.5, 12.6, 14.12).	7
F15	Avoid roads on slopes >67%, unstable, or slide-prone areas. If not able to avoid, take special measures to soil erosion or mass wasting.	2

Table A3-1
Site-specific Mitigation Measures Incorporated into Road Design (cont.)

Mitigation Measure	Description	Number of roads affected
Scenery		
S4	Design road construction to minimize visibility from seen areas.	21
S5	Locate rockpits in unseen areas to meet VQO's.	21
S6	Permit no sidecast of materials to minimize visual impacts.	21
Wildlife		
W3	Restrict timing of blasting near raptor nests.	1
W4	Control access/manage road use to eliminate access to OGR's and to minimize human disturbance to wildlife.	12

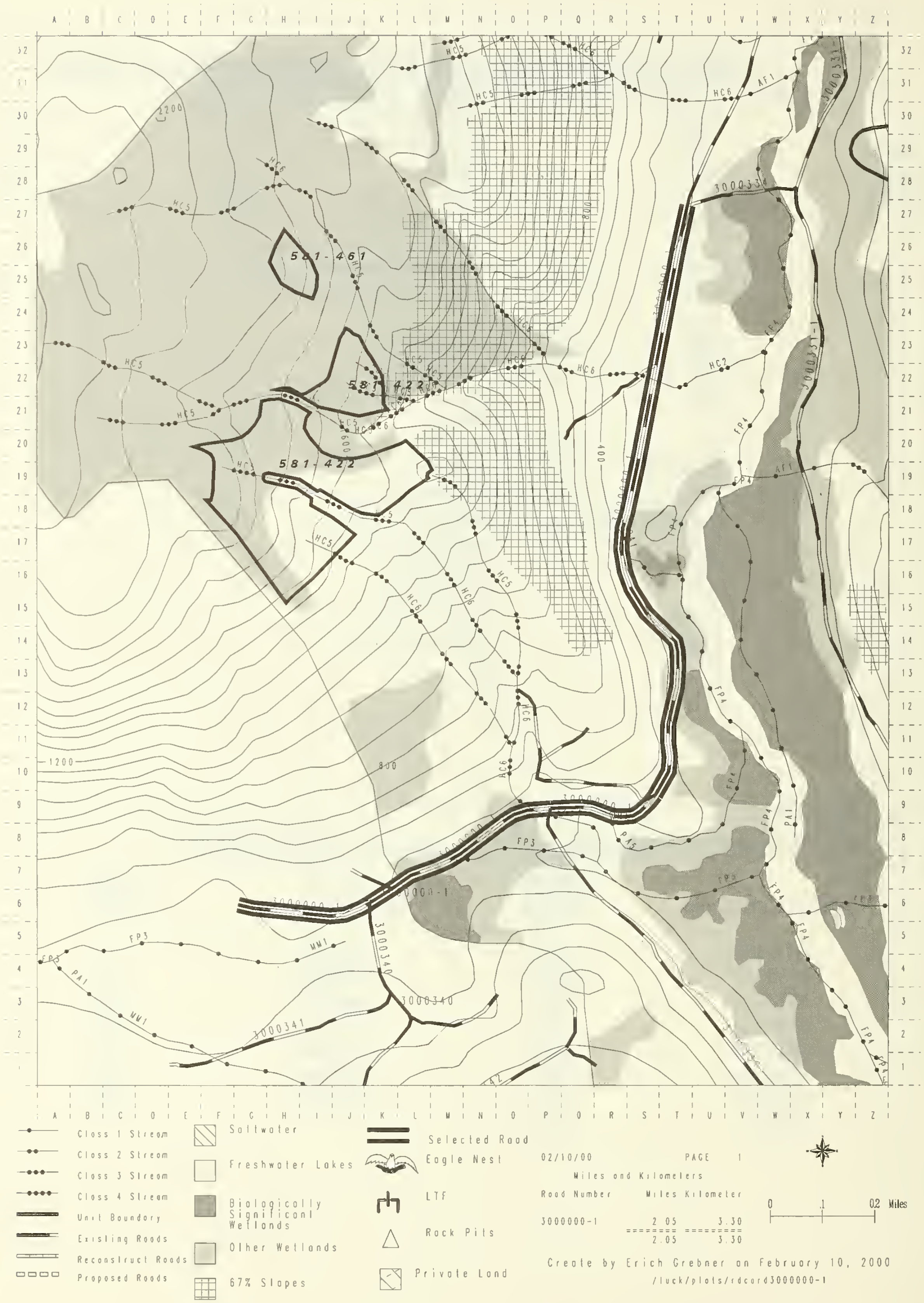
Acronyms and Abbreviations Used on Road Cards

ADF&G	Alaska Department of Fish and Game
AHMU	aquatic habitat management unit
B/W	blue/white
BF	bank full
BMP	Best Management Practice
CFR	Code of Federal Regulations
CMP	corrugated metal pipe (culvert)
CPOW	Central Prince of Wales EIS
E	east
EOP	end of project
G/W	green/white
GIS	geographic information system
LB	low boy
LT	log truck
MP or M.P.	mile post
MPH	miles per hour
N	north
N/A	not applicable
O/W	orange/white
OGR	old-growth reserve
Recon	reconnaissance
Roadcon	road condition survey
S	south
W	west

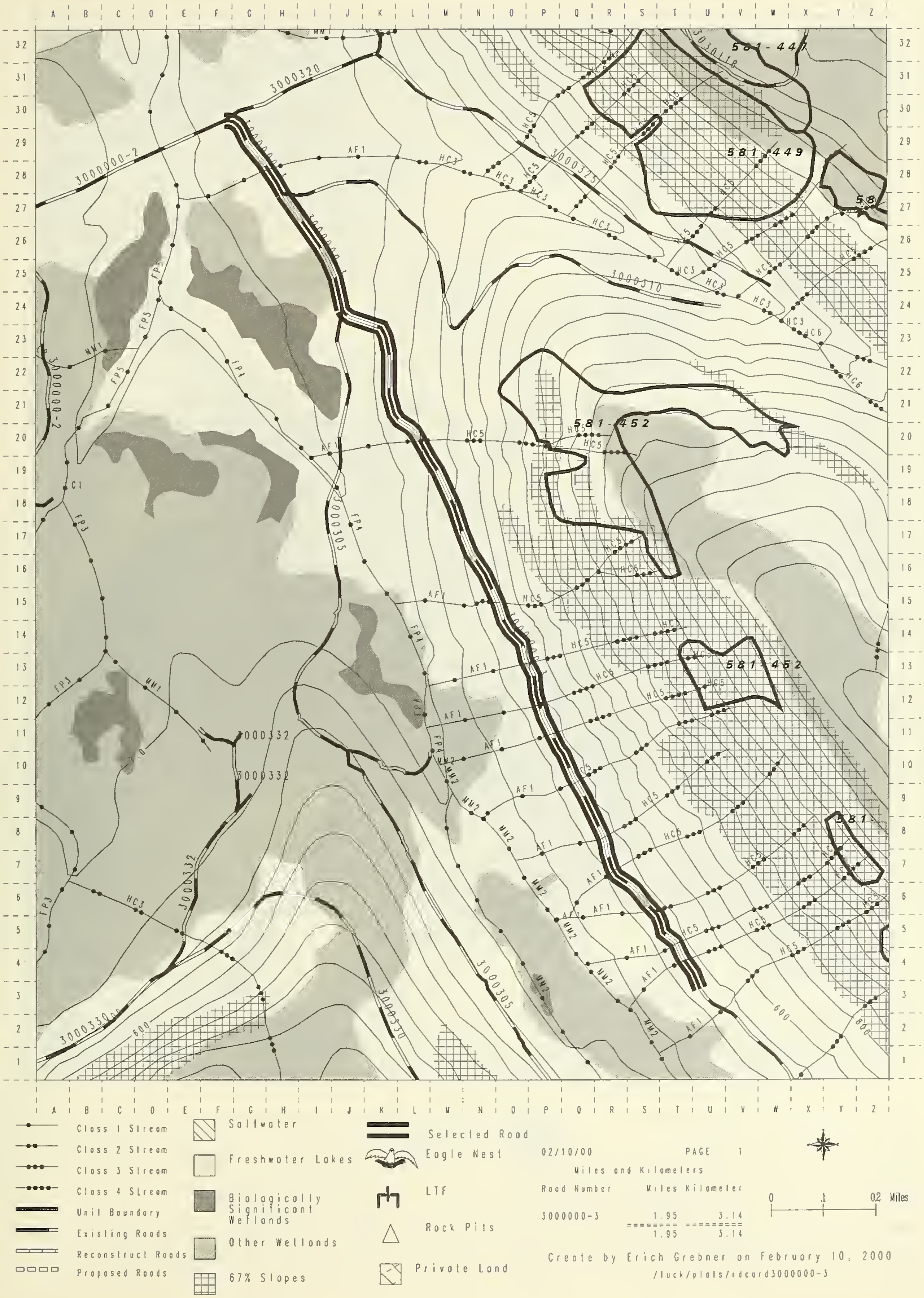
Table A3-2
Selected Alternative: Roads Identified for Construction and Reconstruction

Road Construction	Length (miles)	Road Reconstruction	Length (miles)
3000333	0.64	3000330	1.37
3030112	0.26	3000333	0.74
3030210	0.72	3030005	0.49
3030220	0.53	3030112	0.49
3030350	0.58	3030200-1	0.76
3030356	0.37	3030350	0.35
3030360	0.85	3030600-1	2.08
3030362	0.23		

Luck Lake Project Area ROD Road Card 3000000-1

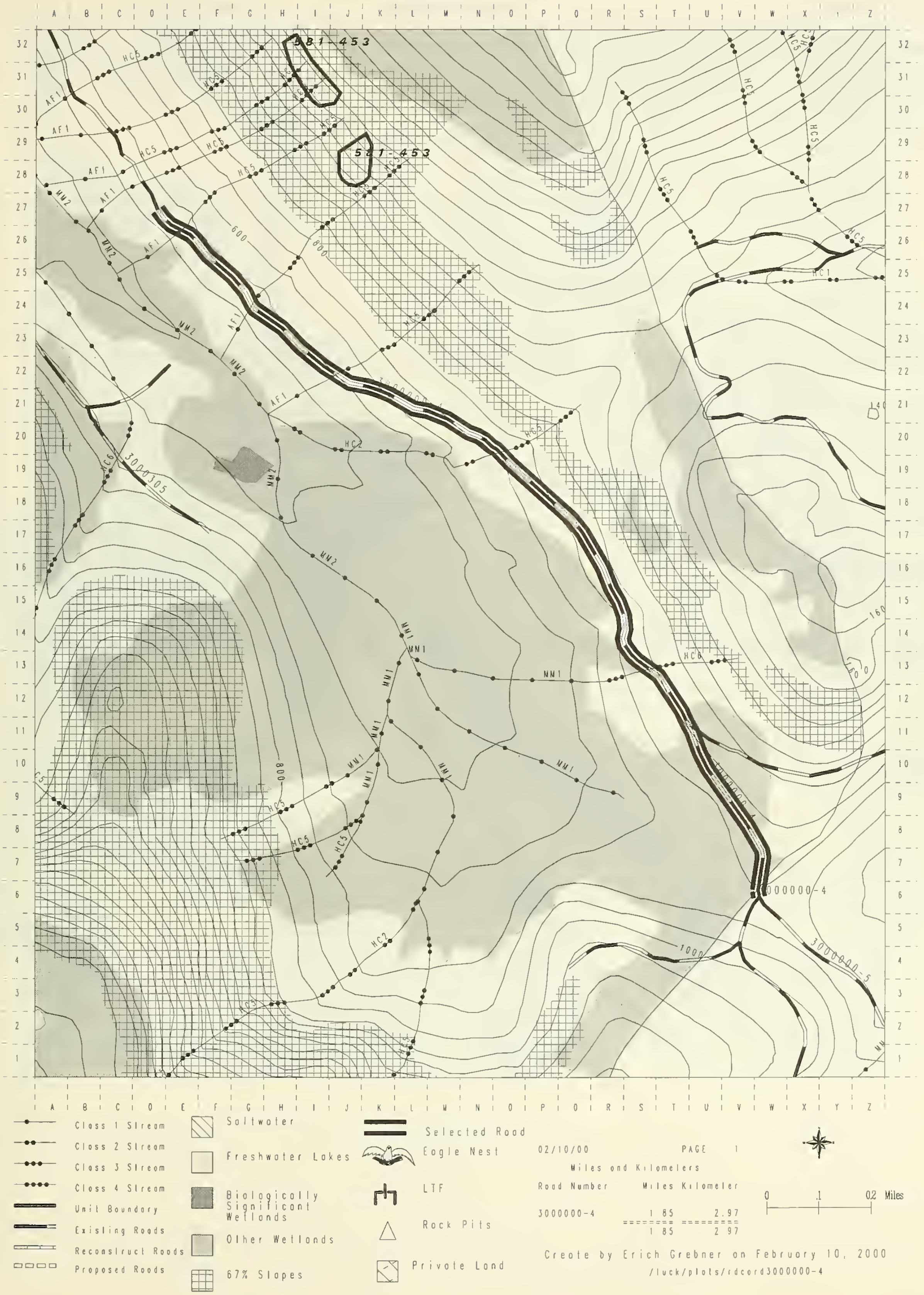


Luck Lake Project Area ROD Road Card 3000000-3



Luck Lake Project Area ROD Road Card 3000000-3

Luck Lake Project Area ROD Road Card 3000000-4



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000000-1	Beginning Terminus MP 47.91	Ending Terminus MP 49.96
3000000-2	Beginning Terminus MP 45.15	Ending Terminus MP 47.91
3000000-3	Beginning Terminus MP 43.20	Ending Terminus MP 45.15
3000000-4	Beginning Terminus MP 41.35	Ending Terminus MP 43.20

Existing Construction Beginning MP 41.35 Length 8.61

Road Management Objectives:

Funct. Class A Traffic Service Level C Hwy. Safety Act Yes Design Veh. LT

Critical Veh. LB Maint. Level: 3 Active Sale 3 Post Sale 3

Intended Purpose and Use: Inter community commerce, forest administration, and recreation.

AFRPR Post Sale Status: Active

Travel Management Strategy:

Encourage: All vehicle access

Accept:

Discourage:

Eliminate:

Prohibit:

Access Restriction Devices: None

Travel Management Narrative:

Existing road serves as a community connection to other communities, state ferry system, and general forest access.

District Ranger Approval (signature):__________________ Date:__________

Design Narrative Information:

Existing road width is 14' to 16' (depending on the segment), design speed 30MPH, grades are moderate, however, MP. 41.35 to approximately 42.8 has grades up to about 16%. Some portions of the road have shot rock surfacing while others have a crushed surfacing.

Timber/Logging Systems:

No concerns.

Silviculture:

No concerns. This is a main system road and will remain open to all vehicle traffic.

Wildlife:

No concerns.

Visual/Recreation:

No concerns.

Cultural:

No concerns.

Lands/Minerals/Geology/Karst:

No concerns.

Soils/Water:

Road 3000000 is an open, driveable arterial road connecting communities and is to be kept open (BMP 14.22). Perform regular maintenance (BMP 14.20 714.23). Federal Highways is currently investigating upgrading a portion of this road to improve access to the community of Coffman Cove. If this route is chosen consider relocation of the first mile to restore stream access on the alluvial fans south of Luck Lake. (BMP 14.3, & 12.3). Encourage other rehab opportunities through the Federal highways planning process (BMP12.3).

Road Location Narrative:

Existing road.

Wetlands Avoidance:

Existing road.

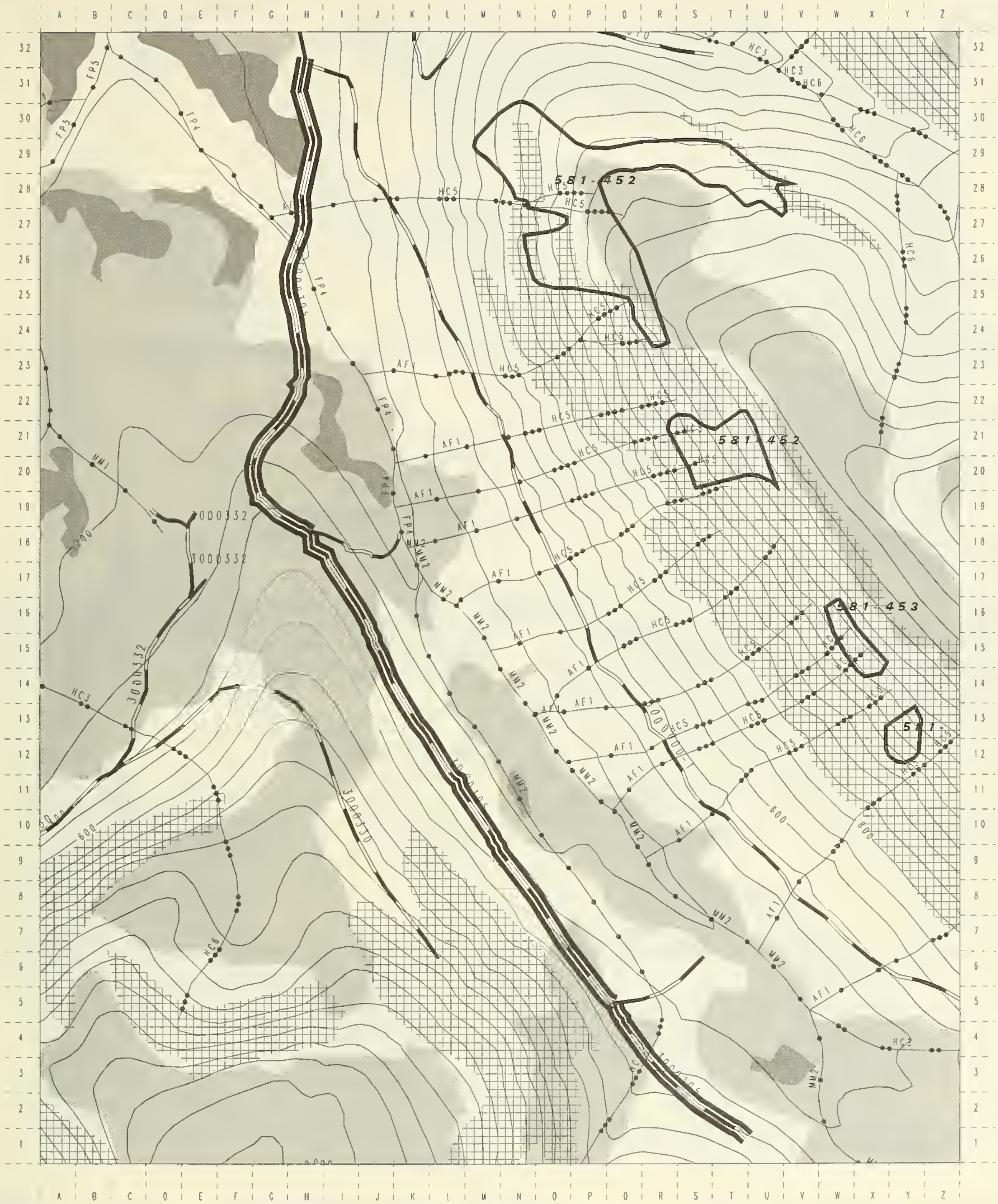
Stream Crossings:

This road has numerous stream crossings. Crossing information is available on the roadcon spreadsheet in the planning record.

Road #: **3000000** Map #: Craig D-3 NE

Aerial Photo: Yr. 91 Line	Photo #'s:
L23N	990-55 ,56
L24N	990-80
L28N	1090-209
L27N	1090-106
L28N	1090-8,9

Luck Lake Project Area ROD Road Card 3000305



Legend		
Class 1 Stream	Saltwater	Selected Road
Class 2 Stream	Freshwater Lakes	Eagle Nest
Class 3 Stream	Biologically Significant Wetlands	LTF
Class 4 Stream	Other Wetlands	Rock Pits
Unit Boundary	67% Slopes	Private Land
Existing Roads		
Reconstruct Roads		
Proposed Roads		

02/09/00 PAGE 1

Miles and Kilometers

Road Number	Miles	Kilometer
3000305	2.28	3.67
	2.28	3.67

0 .1 .2 Miles

Create by Erich Grebner on February 09, 2000

/luck/plots/rdcard3000305

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000305 Beginning Terminus MP 0.00 Ending Terminus MP 2.28

Existing Construction Beginning MP 0.00 Length 2.28

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use:

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Road is currently not driveable due to alder growth and a pulled bridge. Place in storage.
Prohibit:
Access Restriction Devices: Pulled bridge.

Travel Management Narrative:
No anticipated access required for management activities for the next 30 years. Field evaluate the need for drainage structure removal vs. potential adverse impacts associated with removal of the existing vegetative growth.

District Ranger Approval (signature):________________________________ Date:__________________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
No concerns. Most young growth is already treated and access to remaining stands is not compromised. Future treatments will likely be commercial treatments and road reconstruction will be required. Stands 58104-504 and 58104-513 have not been thinned but have been treated for wildlife objectives using canopy gaps and are rapidly moving beyond the size class for precommercial tree thinning consideration.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology, and karst resource concerns.

Soils/Water:
Existing road is alder covered and bridge is pulled. There are no known erosion problems with this road. Road is to be placed in storage (BMP 14.22). Use Road Condition Survey data to determine road storage needs (BMP 14.9). Maintain existing alder cover to the extent practicable (BMP 14.8).

Road Location Narrative:
Existing Road.

Wetlands Avoidance:
Existing road.

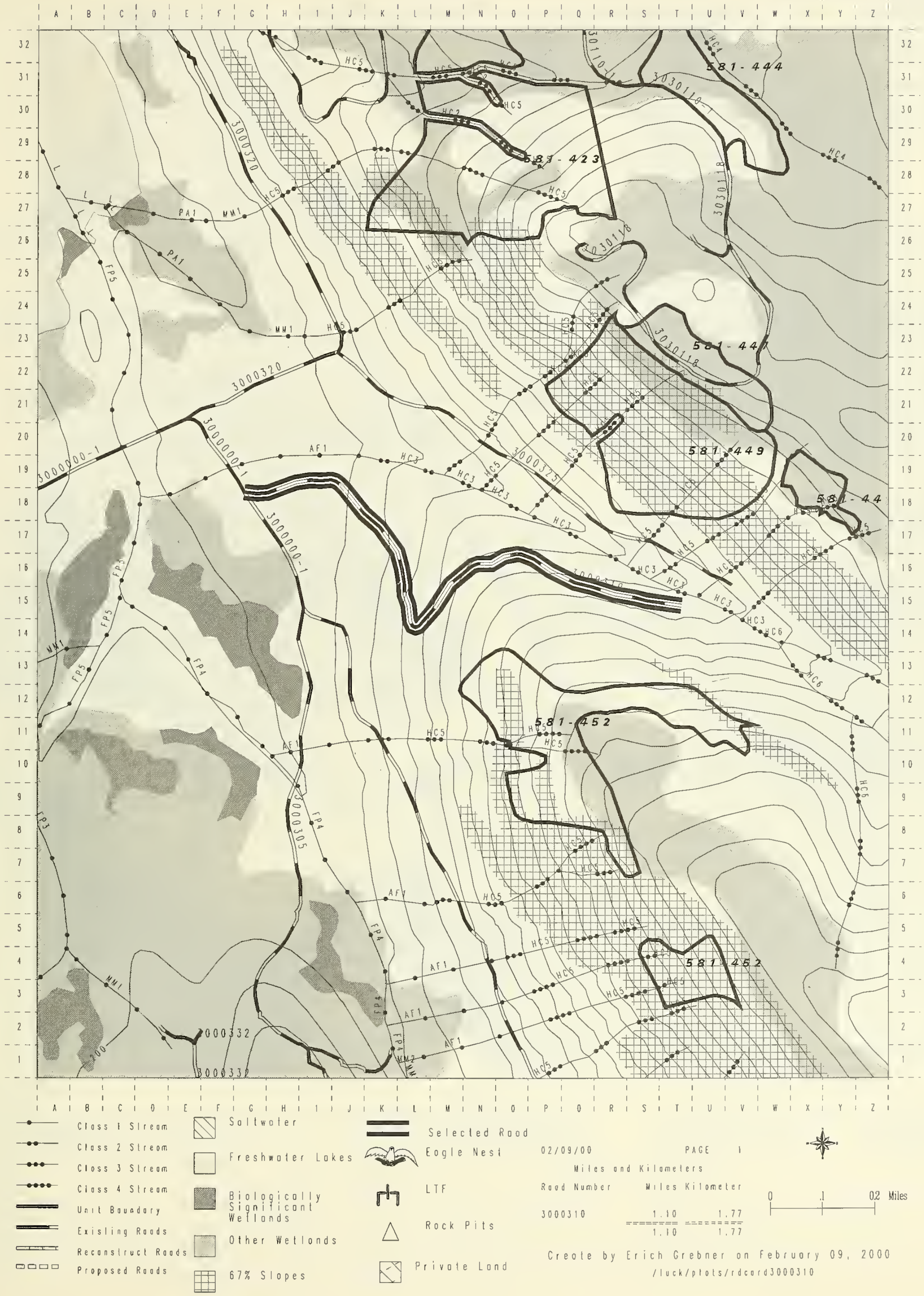
Stream Crossings:
One Class I and one Class IV O/W stream crossing **based on GIS interpretation**. The stream crossings listed below are from beginning to end of existing road.

A) MP unknown AHMU Class I Channel Type FP4 BF width: BF depth:
Gradient %: Structure: Passage Yes Timing dates: 7/18 to 8/15 Substrate:
Narrative: This is SE Fork Luck Creek, ADF&G # 106-10-10300-0010-2070-3001.

B) MP unknown AHMU Class IV O/W Channel Type HC6 BF width: BF depth:
Gradient %: Structure: Passage No Timing dates: 7/18 to 8/15 Substrate:
Narrative: Water quality stream; Close proximity to Class I habitat.

Road #: **3000305** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 27N Photo #'s: 1090-108, 109
Aerial Photo: Yr. 91 Line 28N Photo #'s: 1090-8, 9

Luck Lake Project Area ROD Road Card 3000310



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000310 Beginning Terminus MP 0.00 Ending Terminus MP 1.10

Existing Construction Beginning MP 0.00 Length 1.10

Road Management Objectives:

Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT

Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1

Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive/Closed

Travel Management Strategy:

Encourage:

Accept:

Discourage:

Eliminate: All vehicle access. Storage to MP 1.08; Decommission from MP 1.08 to end of road.

Prohibit:

Access Restriction Devices: Construct barrier ditch at beginning of road. Remove all drainage structures, clean ditches and reseed and stabilize the cut slopes.

Travel Management Narrative:
No anticipated use in foreseeable future. Field evaluate the need for drainage structure removal vs. potential adverse impacts associated with removal of the existing vegetative growth.

District Ranger Approval (signature):______________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
Road will provide helicopter landing for units 581-448, 581-449, and potentially 581-452.

Silviculture:
No concerns. The stand that is accessed by this road has been precommercially treated. Future treatments, if any, will likely be commercial and will require road reconstruction.

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3000000-1, -2, -3, and -4).

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology, and karst resource concerns.

Soils/Water:
The 3000310 road is needed to provide a helicopter landing for units 581-448 and 449. The landing at the end of the road has been used as a helicopter landing in the past and the accumulation of slash could be substantial. Keep slash out of live streams (BMP 14.12 & 14.19). Decommissioning of last 450 feet of this road is planned (BMP 14.22). As part of decommissioning determine if reshaping of slopes is feasible or desirable (BMP 14.24). Currently this segment is alder covered. Maintain existing alder cover to the extent practicable (BMP 14.8). Storage of the first mile of road is planned. Remove structures and shot rock on first 300 feet of road where shot rock is restricting streamflow on the alluvial fan (BMP 14.9). Consider seeding the road surface to control surface erosion, if necessary (BMP 14.8).

Road Location Narrative:
Existing Road serves as helicopter access for harvesting Unit 581-448 and 449.

Wetlands Avoidance:
Existing road.

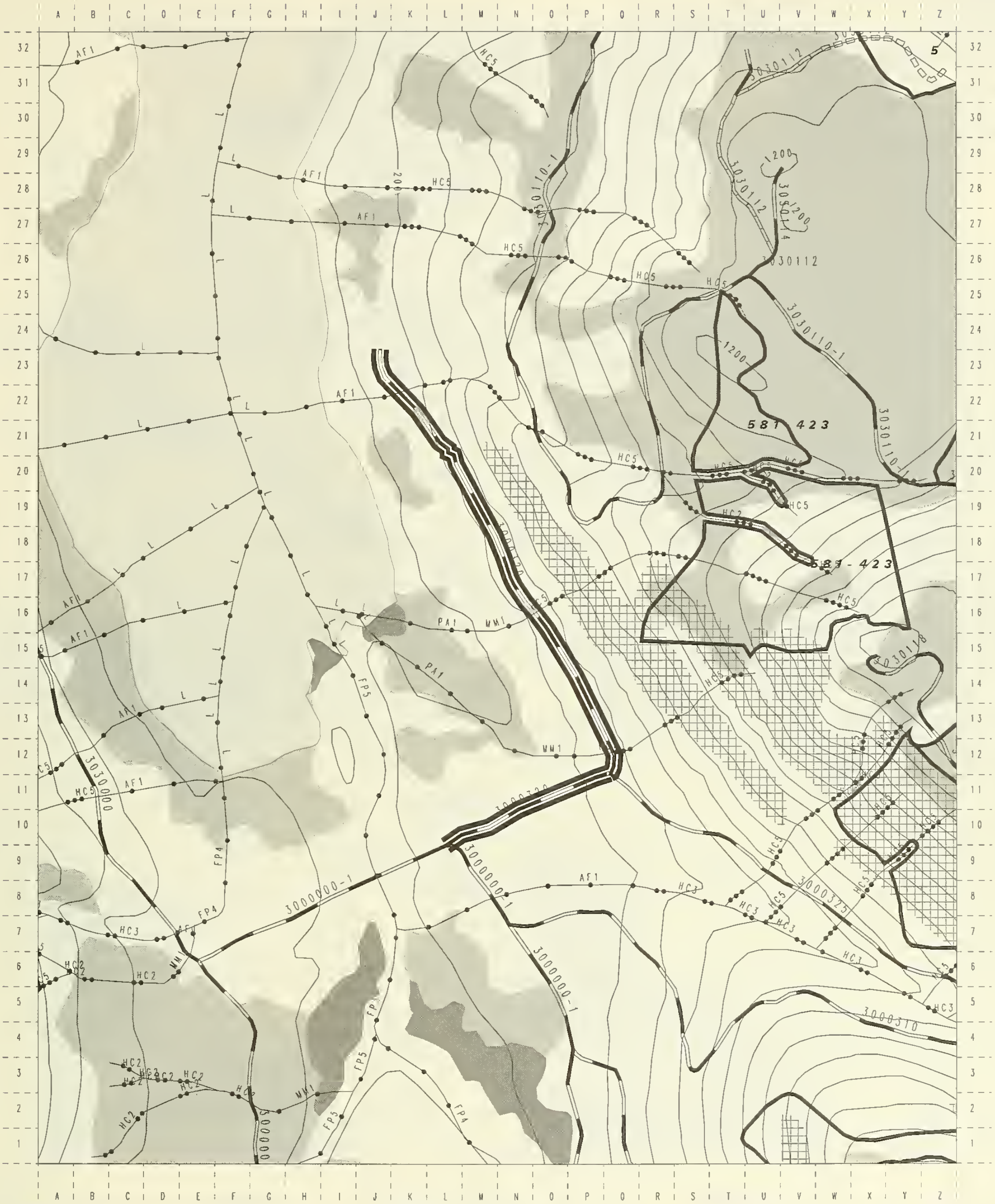
Stream Crossings:
One Class I, B/W and one Class IV, G/W **located by roadcon**; no other fisheries concerns

A) Milepost: 0.02 AHMU: Class I Channel Type: HC2 BF width: BF depth:
Gradient %: Structure: barrier ditch Passage: yes Timing dates: 7/15 to 8/15 Substrate: gr
Narrative: Roadcon found barrier ditch crossing, pulled 54`` CMP; close proximity to steelhead.

B) Milepost: 0.22 AHMU: Class IV, G/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: 18`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 18`` CMP, HC5.

Road #: **3000310** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 27N Photo #'s: 1090-105,106

Luck Lake Project Area ROD Road Card 3000320



Class 1 Stream	Saltwater	Selected Road
Class 2 Stream	Freshwater Lakes	Eagle Nest
Class 3 Stream	Biologically Significant Wetlands	LTF
Class 4 Stream	Other Wetlands	Rock Pits
Unit Boundary	67% Slopes	Private Land
Existing Roads		
Reconstruct Roads		
Proposed Roads		

02/09/00 PAGE 1

Miles and Kilometers

Road Number	Miles	Kilometer
3000320	1.19	1.92
	1.19	1.92

0 .1 .02 Miles

Create by Erich Grebner on February 09, 2000

/luck/plots/rdcard3000320

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000320 Beginning Terminus MP 0.00 Ending Terminus MP 0.95

Existing Construction Beginning MP 0.00 Length 0.95

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Dense vegetative overgrowth.

Travel Management Narrative:
3000320 is currently undriveable due to dense alder growth. No anticipated access required for next 30 years. There are no known erosion problems to date. Several culverts were replaced when the road was still driveable. Pipe removal will require alder removal that may cause more siltation than leaving road in its current condition.

District Ranger Approval (signature):____________________ Date:____________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch. Existing road is alder covered.

Timber/Logging Systems:
No concerns.

Silviculture:
No concerns with inactive status. Nearly all young growth has been treated except stand 58102-503, the southern portion of which is accessed by road 3000320. Access into this portion of stand 58102-503 would be by foot travel of 1.5 miles or less. This stand has been treated for wildlife objectives using canopy gaps and is rapidly moving beyond the normal precommercial thinning size class. Inactive status is appropriate but this road should not be decommissioned. There is potential for commercial treatment (thinning) about 30 years in the future.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

Soils/Water:
Road is currently alder covered and not driveable. The road is planned for storage (BMP 14.22). Walk road to determine best storage options (BMP 14.24). This road may be constricting flows on the alluvial fan near the point of beginning. Remove structures and road prism in stream channels if constriction is occurring BMP 14.9. Maintain existing alder cover to the extent practicable (BMP 14.8).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

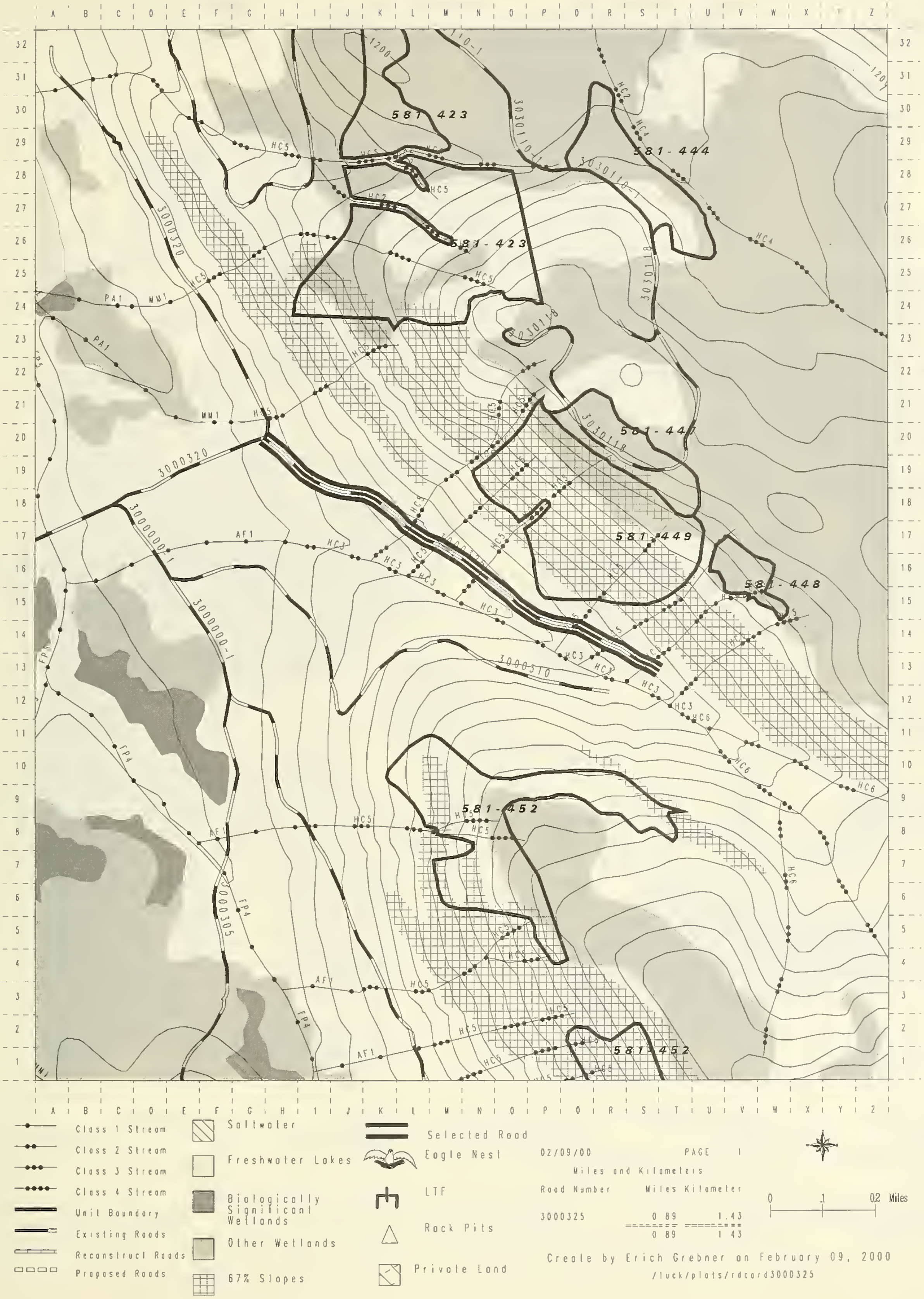
Stream Crossings:
Roadcon found two Class IV, G/W stream crossings. Stream crossings are based on beginning to end of existing road segment.

A) MP 0.47 AHMU: Class IV, G/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: 18" CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 18" CMP with steep HC5 channel.

B) MP 0.80 AHMU: Class IV, G/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: 18" CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 18`` CMP with a small Class IV HC5 channel

Road #: **3000320** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line L27N Photo #'s: 1090-105

Luck Lake Project Area ROD Road Card 3000325



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000325 Beginning Terminus MP 0.00 Ending Terminus MP 1.00

Existing Construction Beginning MP 0.00 Length 1.00

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Dense vegetative overgrowth

Travel Management Narrative:
3000325 is currently impassible due to heavy deciduous and conifer overgrowth. No anticipated access required for management activities for next 30 years. Field evaluate for need to remove drainage structures.

District Ranger Approval (signature):________________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch. Existing road is alder covered.

Timber/Logging Systems:
No concerns.

Silviculture:
No concerns. Young growth stands accessed by this road have been precommercially thinned. Inactive status and storage are appropriate. This road should not be decommissioned as potential exists for commercial thinning treatments about 30 years in the future.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

Soils/Water:
Existing road is alder covered and not driveable. Road is to be placed in storage (BMP14.22). Field evaluate proposed storage work as the road has steep gradients, is close to fish habitat, and could be erosive (BMP 14.24). Maintain existing alder cover to the extent practicable (BMP 14.8).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Stream Crossings:
Two Class III O/W and two Class IV O/W stream crossings were located **based on unit recon**. The crossings below are based on beginning to end of existing road segment. Roadcon unfinished due to aldered road.

A) MP: unknown AHMU: Class III, O/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: Passage: no Timing dates: none Substrate:
Narrative: Class III O/W stream based on unit recon above road.

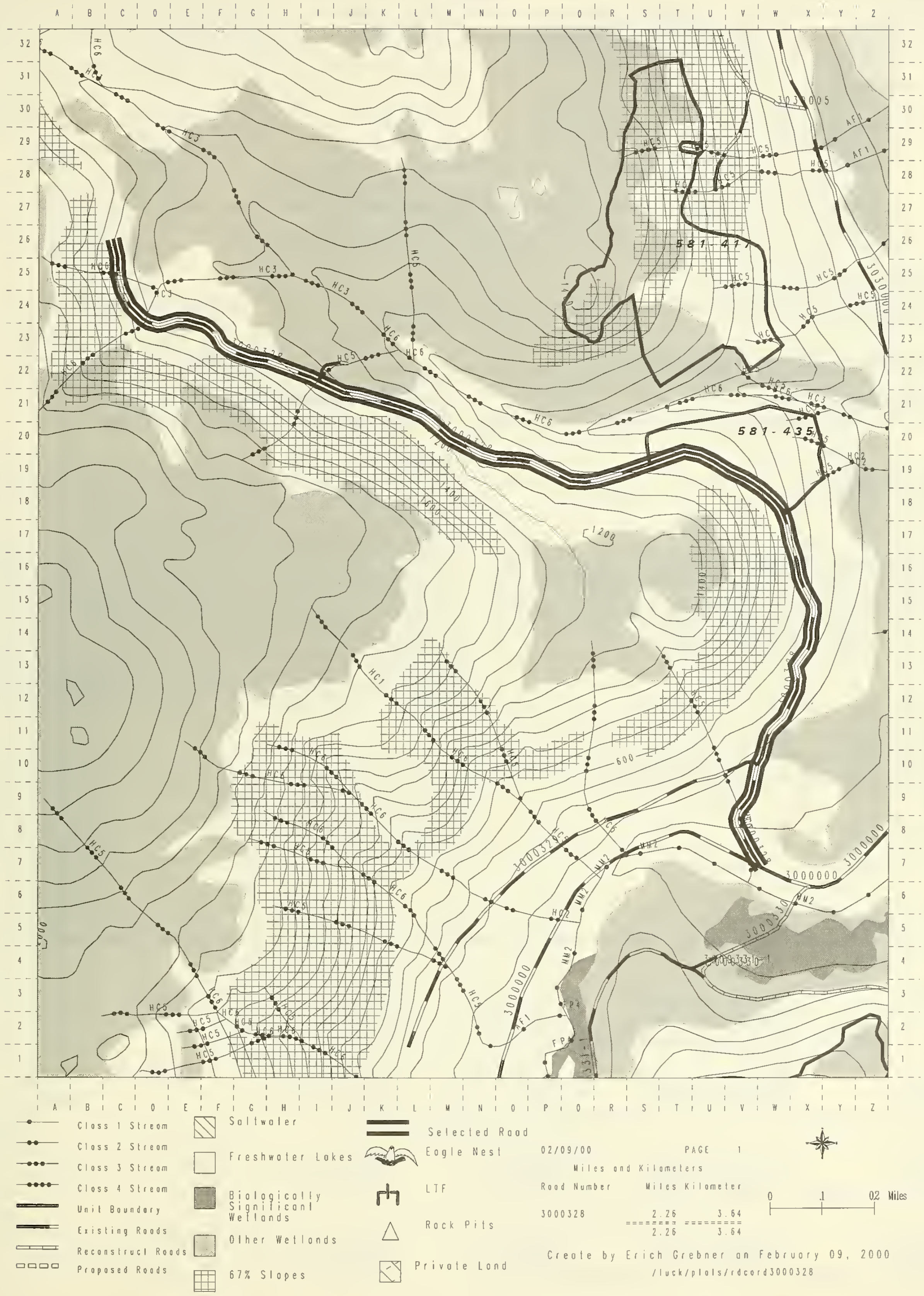
B) MP: unknown AHMU: Class IV, O/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: Passage: no Timing dates: none Substrate:
Narrative: Class IV O/W stream based on unit recon above road.

C) MP: unknown AHMU: Class III, O/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: Passage: no Timing dates: none Substrate:
Narrative: Class III O/W stream based on unit recon above road.

D) MP: unknown AHMU: Class IV, O/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: Passage: no Timing dates: none Substrate:
Narrative: Class IV O/W stream based on unit recon above road.

Road #: **3000325** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line L27N Photo #'s: 1090-106

Luck Lake Project Area ROD Road Card 3000328



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000328 Beginning Terminus MP 0.00 Ending Terminus MP 2.26

Existing Construction Beginning MP 0.00 Length 2.26

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 2/1 Active Sale 2/1 Post Sale 2/1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Active/Closed

Travel Management Strategy:

Encourage:	
Accept:	High clearance vehicles- stormproof to MP 1.0
Discourage:	
Eliminate:	All vehicle access. Decommission from MP 1.0 to end of road, pending availability of money.
Prohibit:	
Access Restriction Devices:	Construct barrier ditch at MP 1.0. Pull all structures, reshape slope, and restore natural drainage

Travel Management Narrative:
Area has high slide potential beyond MP 1.0. Close road and remove pipes to eliminate potential for plugging pipes and road wash outs. No future harvest opportunities.

District Ranger Approval (signature):______________________ Date:____________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
Accesses unit 581-435.

Silviculture:
Future access for non-commercial cultural treatments will be limited or may be expensive. The majority of potential treatment needs are 15 years in the future. Stand 58103-518 will remain accessible and is planned for needs assessment in 2005. No essential reforestation treatments other than survey and certification as restocked are required.

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3030000).

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology, and karst resource concerns.

Soils/Water:
The existing 3000328 road was identified as a sediment source in the watershed analysis. The 3000328 road is a high maintenance road (BMP 14.20) and is proposed for stormproofing the first mile and decommissioning past MP 1.0 (BMP 14.22 and 14.24). Culverts will be pulled and cutbanks allowed to reach a natural angle of repose or reshaped with fillslope material. Grass seeding should be accomplished during closure and in subsequent years if necessary to stabilize exposed soils (BMP 14.8). Avoid sidecast of excavated material in the forested wetland or small bog between the clearcuts (BMP's 12.5, 14.12, and 14.19). Keep open, stormproof, and maintain the 3000328 up to harvest unit 581-435 to provide salvage opportunities (BMP 14.22). Stormproofing should consist of driveable waterbars and extended ditchblocks and additional relief culverts.

Road Location Narrative:
Existing Road accesses unit 581-435.

Wetlands Avoidance:
Existing road.

Stream Crossings:
There are eight O/W Class IV stream crossings on this road **based on Roadcon.** The stream crossings listed below are from the beginning to the end of the existing road.

A) MP: 0.47 AHMU: Class IV O/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: 36`` CMP Passage: no Timing dates: none Substrate:
Narrative: Identified by roadcon as 36`` CMP with 2.0 ft. perched outlet.

B) MP: 1.01 AHMU: Class IV O/W Channel Type: HC6 BF width: BF depth:
Gradient %: 45 Structure: 60`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon identified 60`` CMP, Class IV, HC6 with a 10.0 ft. perched outlet.

C) MP: 1.07 AHMU: Class IV O/W Channel Type:HC5 BF width: BF depth:
Gradient %: Structure: 36`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 36`` CMP, Class IV, with a 4.0 ft. perched outlet.

D) MP: 1.27 AHMU: Class IV O/W Channel Type:HC5 BF width: BF depth:
Gradient %: 50 Structure: 36`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 36`` CMP, Class IV with a 4.0 ft. perched outlet.

E) MP: 1.42 AHMU: Class IV O/W Channel Type:HC5 BF width: BF depth:
Gradient %: Structure: 36`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 36`` CMP, Class IV.

Road No. 3000328

F) MP: 1.73 AHMU: Class IV O/W Channel Type:HC5 BF width: BF depth:
Gradient %:30 Structure: 36`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 36`` CMP, Class IV with a 5.0 ft. perched outlet.

G) MP: 1.91 AHMU: Class IV O/W Channel Type:HC5 BF width: BF depth:
Gradient %: 25 Structure: 48`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 48`` CMP, Class IV with a 4.0 ft. perched outlet.

H) MP: 2.06 AHMU: Class IV O/W Channel Type:HC5 BF width: BF depth:
Gradient %: 55 Structure: 48`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 48`` CMP, Class IV with an 8.0 ft. perched outlet.

Road #: **3000328** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 27N Photo # s: 1090-102

Luck Lake Project Area ROD Road Card 3000329

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000329 Beginning Terminus MP 0.00 Ending Terminus MP 0.91

Existing Construction Beginning MP 0.00 Length 0.91

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Barrier ditch at beginning of the road. Road is currently washed out at approximately MP 0.4. Remainder of the road is overgrown with alders.

Travel Management Narrative:
Road is currently undriveable. No anticipated management activities for the next 30 years. Field evaluate the need for drainage structure removal vs. potential adverse impacts associated with removal of the existing vegetative growth. Road may require some stabilization work.

District Ranger Approval (signature):________________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
No concerns. This road accesses upper segments of young stands accessible from the FDR 3000000. Treatment needs in stand 58103-505 can be accessed from FDR 3000000. Future precommercial thinning of younger stand 58103-533 will be accessed from FDR 3000000. Future commercial thinning treatments will require road reconstruction.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology, and karst resource concerns.

Soils/Water:
Road is currently alder covered and access blocked with a barrier ditch. This road is planned for storage (BMP 14.22). Washed out portion of road is stable and not a source of fine sediment. A road condition survey may identify culverts for removal on this road, however removal of any structures will require removal of alders. Removal of alders may mobilize more sediment than leaving the structures in place. Need to walk this road to determine the best storage option (BMP's 14.22 and 14.20). Maintain existing alder cover to the extent practicable (BMP 14.8).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Stream Crossings:
Three Class IV, O/W streams were **located by Roadcon.** Survey was unfinished due to aldered over road.

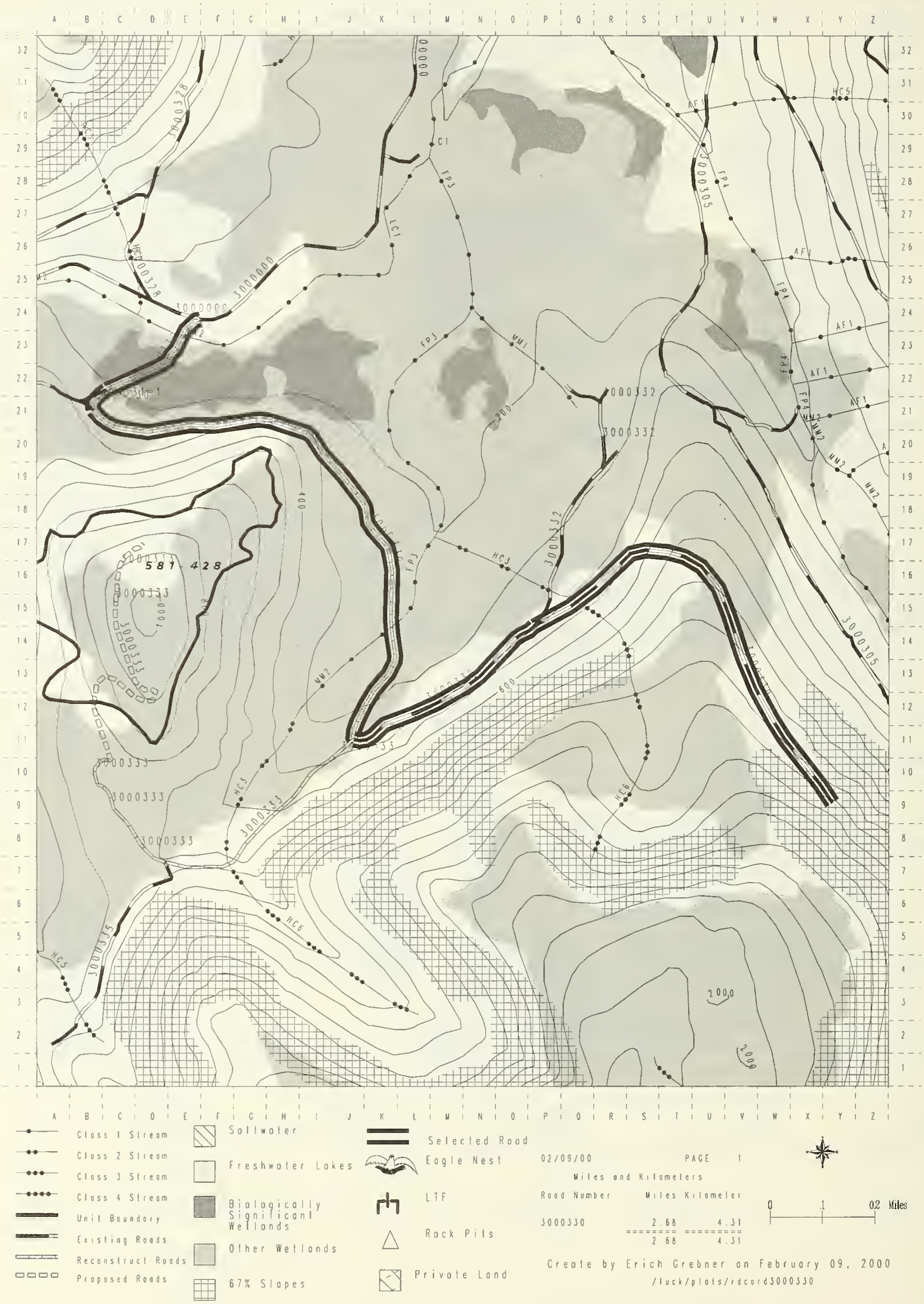
A) MP: 0.10 AHMU: Class IV O/W Channel Type: HC5 BF width: 8.0 ft. BF depth:
Gradient %: 15 Structure: 48`` CMP Passage: no Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon found 48`` CMP, Class IV. Close proximity to Luck Creek.

B) MP: 0.27 AHMU: Class IV O/W Channel Type: HC5 BF width: 7.0 ft. BF depth:
Gradient %: 20 Structure: 36`` CMP Passage: no Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon found 36`` CMP with a 5.5 ft. perched outlet. Close proximity to Luck Creek.

C) MP: 0.54 AHMU: Class IV, O/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: 36`` CMP Passage: no Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon found 36`` CMP; needs 48" replacement. Close proximity to Luck Creek.

Road #: **3000329** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 26N Photo #'s: 1090-210

Luck Lake Project Area ROD Road Card 3000330



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000330 Beginning Terminus MP 0.00 Ending Terminus MP 2.68

Reconstruction Beginning MP 0.00 Length 1.37
Existing Construction Beginning MP 1.37 Length 2.68

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Pull bridge and pipes, create water bars, and reseed slopes. Place a shot rock barrier across road just before the bridge crossing.

Travel Management Narrative:
Remove bridge and pipes to eliminate potential for plugging pipes and road washouts. Ensure maintenance needs on this road and its tributaries are evaluated and completed before removing bridge. Slide at MP 1.8. Assess the work beyond the slide and evaluate whether to repair road to conduct maintenance work. For portions of the road covered by vegetation, field evaluate the need for drainage structure removal vs. potential adverse impacts associated with removal of the existing vegetative growth

District Ranger Approval (signature):________________ Date:________________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
Will require helicopter/other access for reforestation work in unit 581-428. No other immediate concerns. Most of the young growth accessed by this road has been precommercially treated. Stands 58104-518 (61 acres), 523 (36 acres) and 521 (48 acres) remain to be treated and could be forgone due to road access limitations that may make precommercial treatments prohibitively expensive. These stands will be assessed for thinning needs in about 8 to 15 years.

Wildlife:
No blasting from March 1st to July 31st (raptor nest). No other concerns.

Visual/Recreation:
Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3030000).

Cultural:
Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:
No known minerals, geology, and karst resource concerns.

Soils/Water:
The 3000330 road needs minor reconstruction. Road drainage is inhibited by beaver dams at the culvert crossing (BMP's 14.9, 14.14 and 14.20). Timing may be required for reconstruction activities (BMP 14.6) see fisheries section. Reconstruct only portions of the road necessary to access unit 581-428. Store remainder of road by pulling drainage structures prone to plugging (BMP 14.24) and waterbarring the rest. The 3000330 road is scheduled for storage after harvest via waterbarring each drainage structure and removal of the bridge (BMP 14.22).

Road Location Narrative:
Existing Road accesses unit 581-435.

Wetlands Avoidance:
Existing road.

Stream Crossings:
Four Class I and one Class II crossings are known **based on road condition survey for the reconstruction.** The crossings listed below are from the beginning to the end of the existing road.

A) MP: 0.00 AHMU: Class I Channel Type: PA1 BF width: 3.0 ft. BF depth:
Gradient %: 2 Structure: 48``CMP Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon found 48`` CMP at MP 0.00; no fish were sampled. Class I according to USFS interpretation.

B) MP: 0.06 AHMU: Class I Channel Type: MM2 BF width: BF depth:
Gradient %: Structure: Modular bridge Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: This is mainstem Luck Creek, SW Fork, ADF&G # 106-10-10300-0010-2070.

C) MP: 0.39 AHMU: Class I Channel Type: MM1 BF width: 3.0 ft. BF depth:
Gradient %: Structure: log culvert Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: This crossing is Class I, MM1 channel type with Coho catalogued immediately downstream.

D) MP: 1.18 AHMU: Class I Channel Type: MM2 BF width: 12.0 ft. BF depth:
Gradient %: Structure: 60`` CMP Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: This crossing is Class I, MM2 channel type with Coho catalogued immediately downstream.

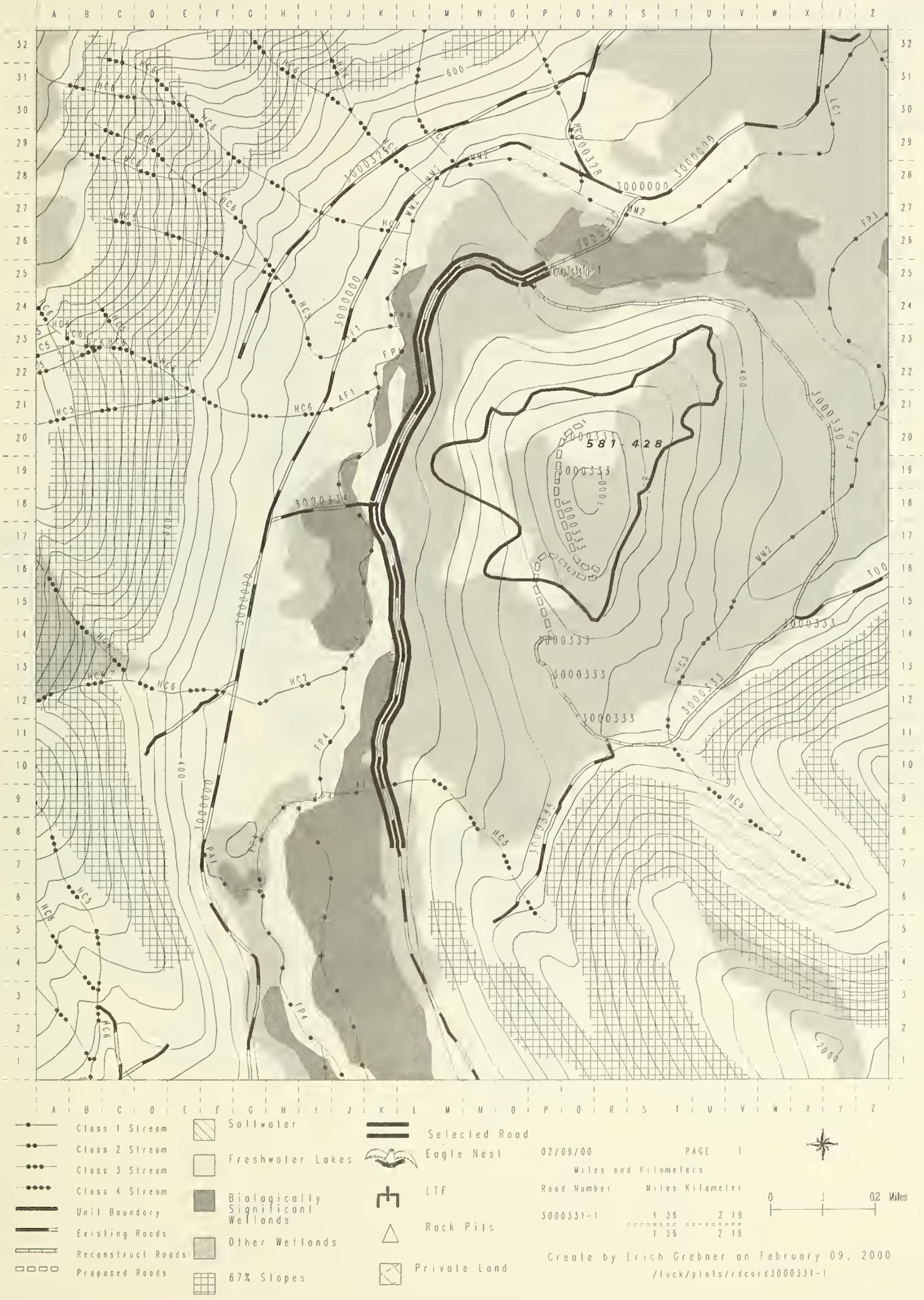
ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000330

E) MP: 1.88 AHMU: Class II/III Channel Type: HC3 BF width:
BF depth:
Gradient %: Structure: barrier ditch Passage: yes Timing dates: none Substrate:
Narrative: GIS shows Class II/III change at crossing; currently barrier ditch.

Road #: **3000330** Map #: Craig D-3 NE Aerial Photo: Yr. 1991 Line 27N Photo #'s: 1090-108

Luck Lake Project Area ROD Road Card 3000331-1



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000331-1 Beginning Terminus MP 0.00 Ending Terminus MP 1.36

Existing Construction Beginning MP 0.00 Length 1.36

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use:

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Pulled bridge on 3000330 road. Remove drainage structures.

Travel Management Narrative:
Currently the road is driveable, however alder growth is dense and will eliminate vehicle access in the near future.

District Ranger Approval (signature):________________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
A single precommercial thinning opportunity in stand 58104-521 (61 acres) will be isolated by closure on road 3000330 which may make precommercial thinning prohibitively expensive. This stand will be evaluated for precommercial thinning near year 2006. Other future treatments in the area will likely be commercial and will require road reconstruction.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology, and karst resource concerns.

Soils/Water:
Existing road is alder covered but driveable. Drainage structures prone to plugging should be removed or ditched. All structures left in place should be waterbarred (BMP 14.9). Maintain existing alder cover to the extent practicable (BMP 14.8). Discourage or eliminate vehicular access (BMP 14.22). Place in storage.

Road Location Narrative:
Existing Road

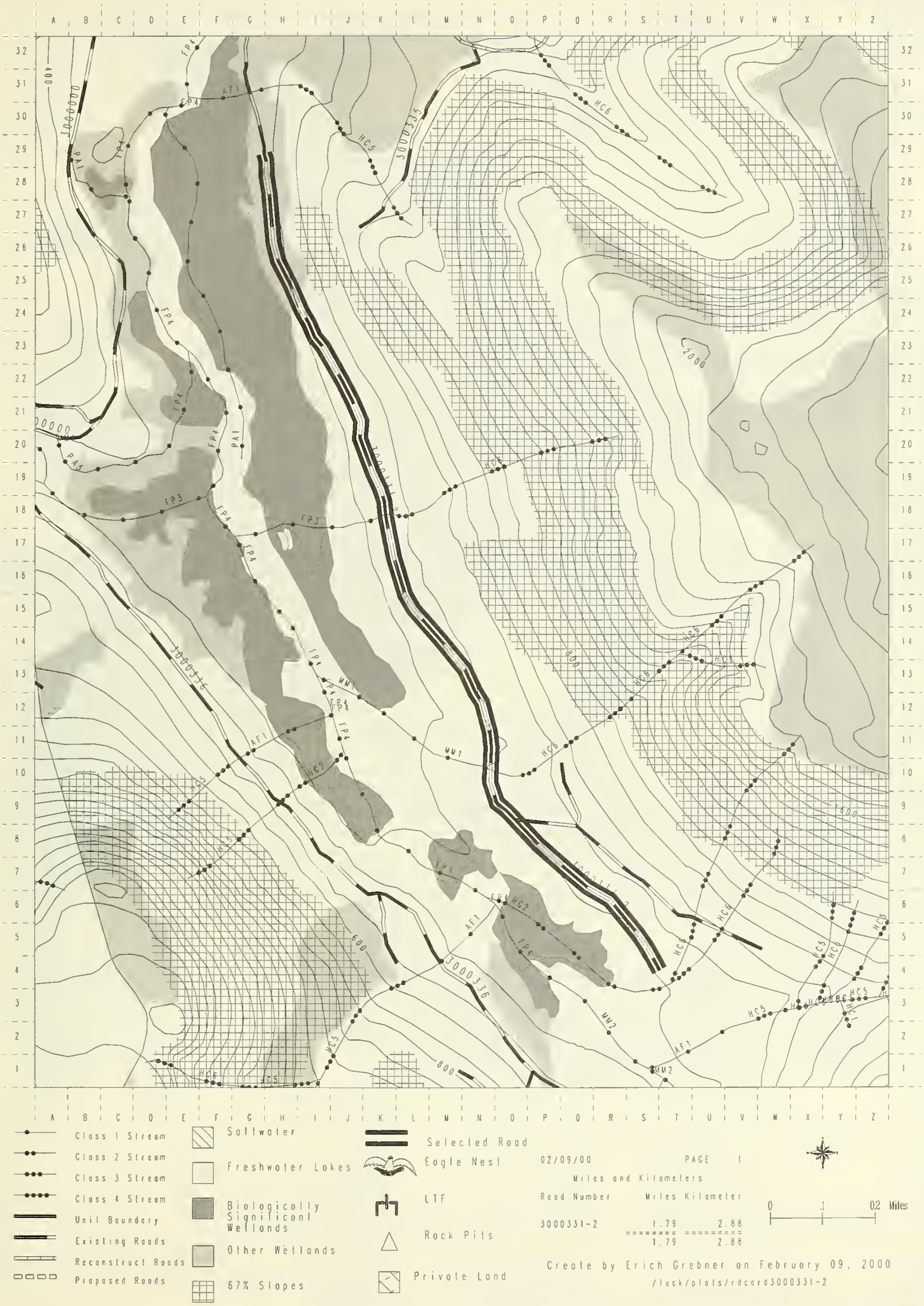
Wetland Avoidance:
Existing Road.

Stream Crossings:
One Class I (MP 0.77) crossing with Coho observed **based on Roadcon.**

A) MP: 0.77 AHMU: Class I Channel Type: MM1 BF width: 10.0 ft. BF depth:
Gradient %: Structure: 48`` CMP Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: Class I, MM1 with Coho confirmed; 48`` CMP at MP 0.77; data from Roadcon.

Road #: **3000331-1** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 27N Photo # s: 1090-108

Luck Lake Project Area ROD Road Card 3000331-2



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000331-2 Beginning Terminus MP 1.36 Ending Terminus MP 3.15

Existing Construction Beginning MP 1.36 Length 1.79

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use:

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place road in storage.
Prohibit:
Access Restriction Devices: Pulled bridge on 3000330 road.

Travel Management Narrative:
Currently, the road is over grown by alders. Bridge pulled and a barrier ditch is in place at MP 1.23. Culverts are pulled and the road is waterbarred after MP 1.37.

District Ranger Approval (signature):______________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
No immediate concerns. No opportunities for treatment exist in the near future. All young growth along this road segment has been precommercially treated. Future treatment opportunities will likely be commercial and will require road reconstruction.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology, and karst resource concerns.

Soils/Water:
Existing road is alder covered and not driveable. All drainage structures have been removed. The road is currently in storage and planned for storage (BMP 14.22).

Road Location Narrative:
Existing Road

Wetland Avoidance:
Existing Road.

Stream Crossings:
One Class 1, Two O/W Class III and four O/W Class IV crossings **based on Roadcon.** The stream crossings listed below are from the end of the 3000331-1 to the end of the existing road.

A) MP: 1.23 AHMU: Class I Channel Type: AF1 BF width: 5.0 ft. BF depth:
Gradient %: 2 Structure: barrier ditch Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: Coho, Dolly Varden and Cutthroat observed by roadcon; Close proximity to steelhead.

B) MP: 1.85 AHMU: Class IV, O/W Channel Type: HC2 BF width: 3.0 ft. BF depth:
Gradient %: Structure: barrier ditch Passage: no Timing dates: 7/15 to 8/15 Substrate:
Narrative: Water quality stream; upstream HC6.

C) MP: 1.91 AHMU: Class IV, O/W Channel Type: HC2 BF width: 3.0 ft. BF depth:
Gradient %: Structure: barrier ditch Passage: no Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon identified a channel that was not classified.

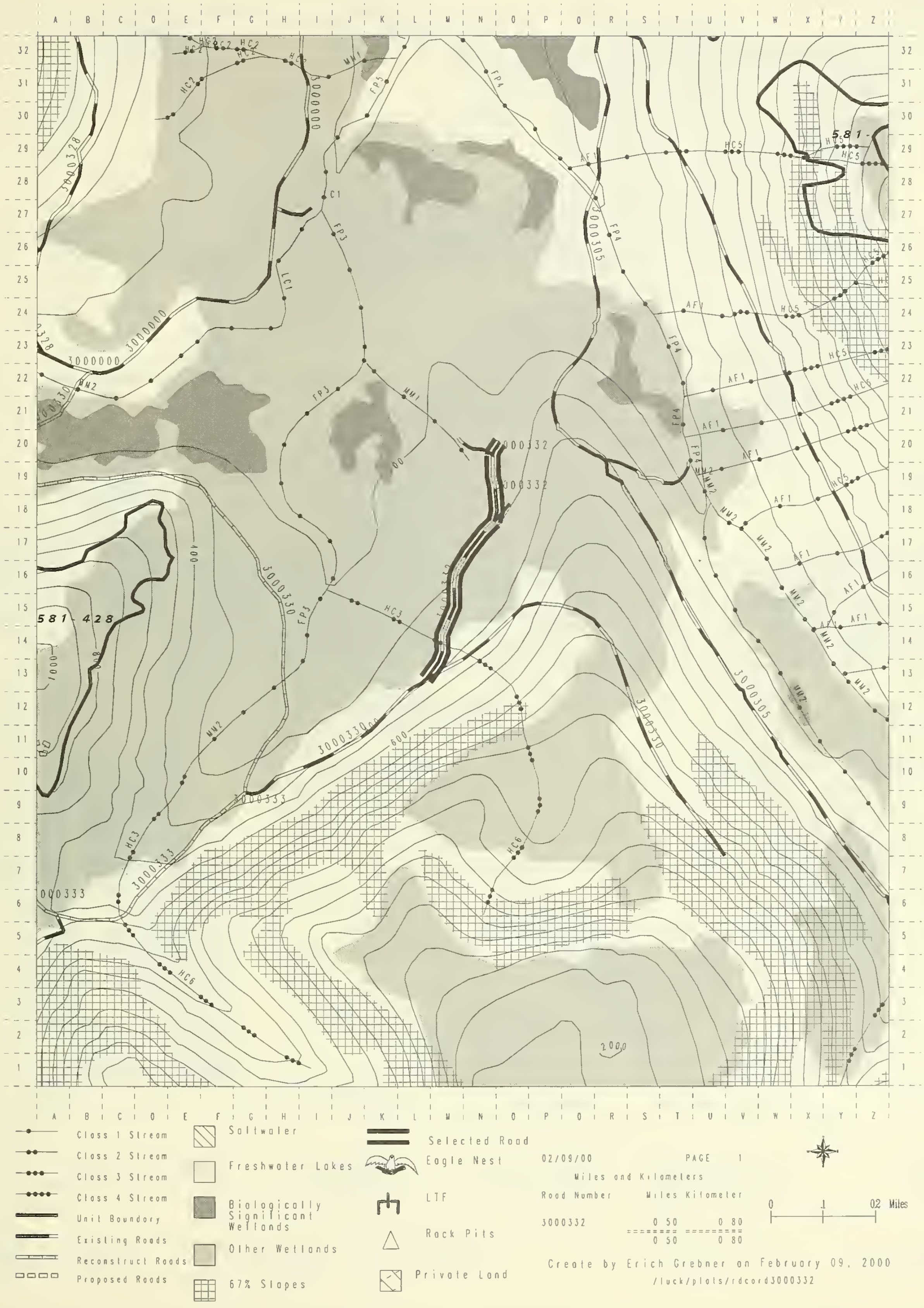
D) MP: 1.96 AHMU: Class IV, O/W Channel Type: HC2 BF width: 3.0 ft. BF depth:
Gradient %: Structure: barrier ditch Passage: no Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon identified a channel that was not classified.

E) MP: 2.06 AHMU: Class III Channel Type: HC5 BF width: 5.0 ft. BF depth:
Gradient %: Structure: barrier ditch Passage: no Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon shows no fish and barrier; Water quality stream upstream, HC5; close proximity to steelhead.

F) MP: 2.56 AHMU: Class III Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: barrier ditch Passage: no Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon shows large stream; no fish; water quality stream; close proximity to steelhead.

Road #:3000331-2 Map #: Craig D-3NE Aerial Photo: Yr 91 Line: 27N Photo #'s: 1090-109,110

Luck Lake Project Area ROD Road Card 3000332



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000332 Beginning Terminus MP 0.00 Ending Terminus MP 0.50

Existing Construction Beginning MP 0.00 Length 0.50

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use: Silvicultural activities

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Tributary to 3000330, which will be stored by removing a bridge. Currently closed by slide on the 3000330 road.

Travel Management Narrative:
No anticipated access required for management activities for next 30 years. Culverts are currently removed.

District Ranger Approval (signature):________________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; max. grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
Road will be effectively closed with closure of FDR 3000330. Access to future silvicultural treatment in stand 58104-523 could be forfeit (foot travel greater than 1.5 miles) due to closure of 3000330. Treatment is not currently planned or identified as a need. Stand 58104-523 will be examined for thinning needs in 8-10 years. Foot access is reasonable for needs assessment but may be prohibitive for treatment.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

Soils/Water:
Access to road 3000332 is currently blocked via a landslide on the 3000330 road. Road is planned for storage (BMP 14.22). Use road condition survey data to determine erosion control needs. Drainage structures prone to plugging should be removed or ditched. All structures left in place should be waterbarred (BMP 14.9). Timing may be necessary for culvert removal, see fisheries section (BMP14.6).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Stream Crossings:
One Class IIT B/W, one Class IV O/W and two Class IV G/W streams **located by Roadcon**. Stream crossings are based on beginning to end of existing road segment.

A) MP 0.07 AHMU: Class IV, G/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: 36`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 36`` CMP with 2.0 ft. perched outlet.

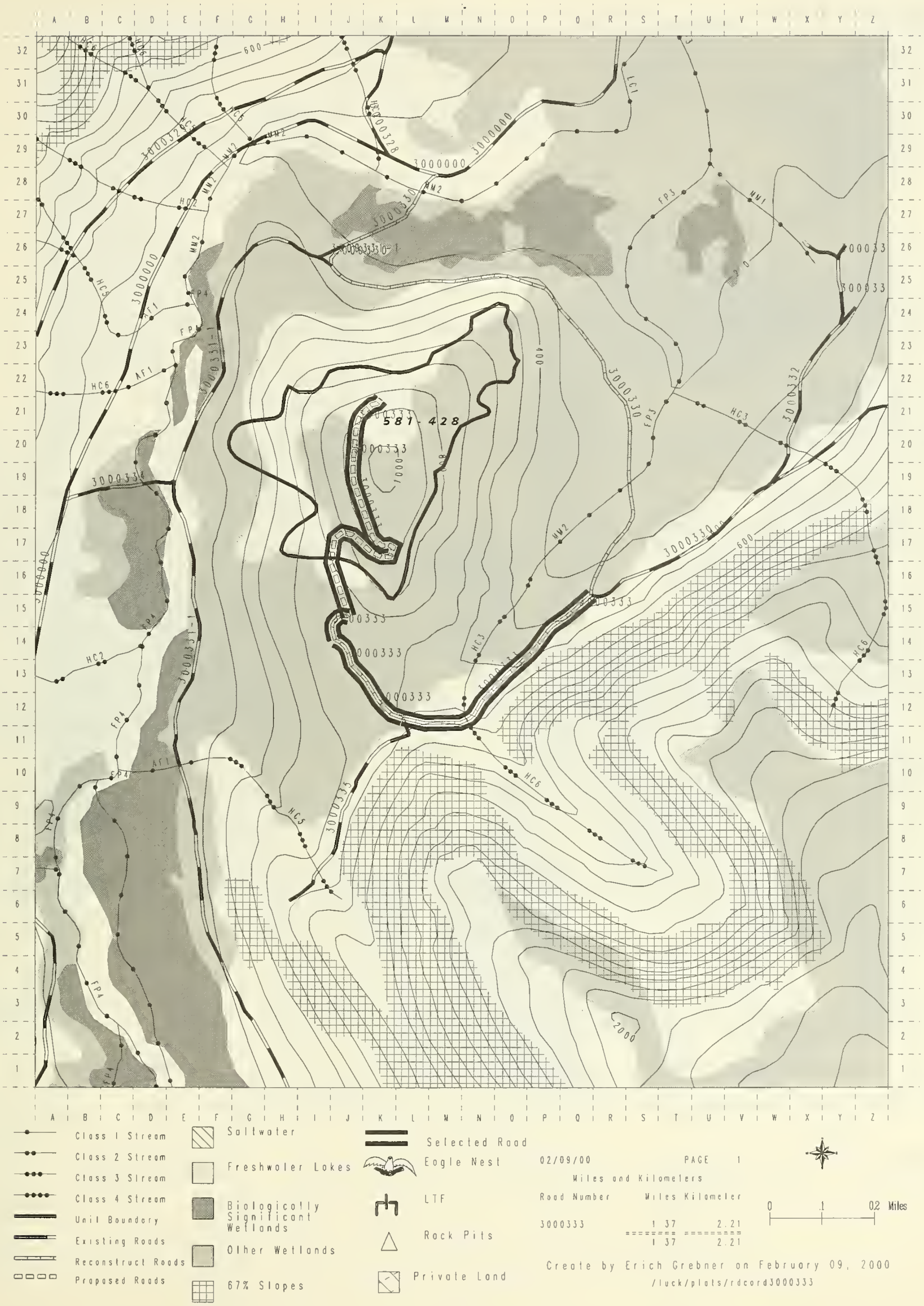
B) MP: 0.08 AHMU: Class IV, G/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: 36`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 36`` CMP with 3.5 ft. perched outlet.

C) MP: 0.09 AHMU: Class IV, O/W Channel Type: HC3 BF width: BF depth:
Gradient %: Structure: 48`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 48`` CMP; Class I ~1000 ft. downsteam.

D) MP: 0.24 AHMU: Class IIT, B/W Channel Type: HC2 BF width: BF depth:
Gradient %: Structure: 24`` CMP Passage: Yes Timing dates: none Substrate:
Narrative: Roadcon found 24`` CMP; also classified stream as Class IIT with 2.0 ft. perched outlet.

Road #: **3000332** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line L27N Photo #'s: 1090-106

luck Lake Project Area ROD Road Card 3000333



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000333 Beginning Terminus MP 0.00 Ending Terminus MP 1.38

Reconstruction	Beginning MP	0.00	Length	0.74
New Construction	Beginning MP	0.74	Length	0.64

Road Management Objectives:

Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT

Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1

Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:

Encourage:

Accept:

Discourage:

Eliminate: All vehicle access. Place in storage.

Prohibit:

Access Restriction Devices: Tributary to 3000330 which will be closed by pulling a bridge.

Travel Management Narrative:

Remove pipes, create water bars, and reseed slopes to eliminate potential for plugging pipes and road wash outs.

District Ranger Approval (signature):______________________ Date:______________

Design Narrative Information:

Design standards are as follows: Road width 14'; Design speed 10 MPH.; Max grade 20%; Surface shot rock; minimize ditches and roll grade to drain and construct minimum standard J-hole turnouts.

Timber/Logging Systems:

The 3000333 road accesses timber sale unit 581-428.

Wildlife:

No concerns.

Silviculture:

Road will be effectively closed with closure of 3000330. Will require helicopter or other access for required reforestation work in unit 581-428. Road 3000333 accesses the upper portion of young growth stand 58104-521 (61 acres) which is currently scheduled for thinning needs assessment in 2006.

Visual/Recreation:

Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3030000).

Cultural:

Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:

No known minerals, geology, and karst resource concerns.

Soils/Water:

On reconstruction section keep any excavated material out of poor sedge fen adjacent to the road (BMP 12.5, 14.12, and 14.19). New construction crosses some 60 percent slopes but no slopes over 67 percent. Full bench road construction (BMP 14.7) and control of side cast material (BMP 14.12) may be necessary for 300 to 500 feet on the west side of unit 581-428. The proposed route will cross a poor sedge fen and scrub forest in the north end of unit 428. The wetland is unavoidable while meeting grade constraints and accessing the necessary landing at the north end of the unit. This wetland sits in a small saddle between two knobs and donates water to an intermittent stream flowing northwest out of the unit. Apply BMP 12.5 and 33 CFR BMP's 1, 5, 6, 7 and 14. The 3000333 will be put in storage following harvest and meets the requirements for the silvicultural exemption from the 404 permit process. The proposed rock source is an existing rock pit with low erosion potential, keep overburden out of nearby wetlands (BMP 12.5). Storage to consist of removal of pipes prone to plugging and waterbarring the rest (BMP's 14.22 & 14.9). Consider grass seeding road surface (BMP 14.8).

Road Location Narrative:

Existing Road and new extension accesses Unit 581-428.

Wetlands Avoidance:

The new extension traverses forested wetlands that are unavoidable.

Stream Crossings:

No known stream crossings on new construction. One Class II crossing is known for the reconstruction **based on Roadcon** at MP 0.36. The information contained below is for the reconstructed section beginning to end of existing road.

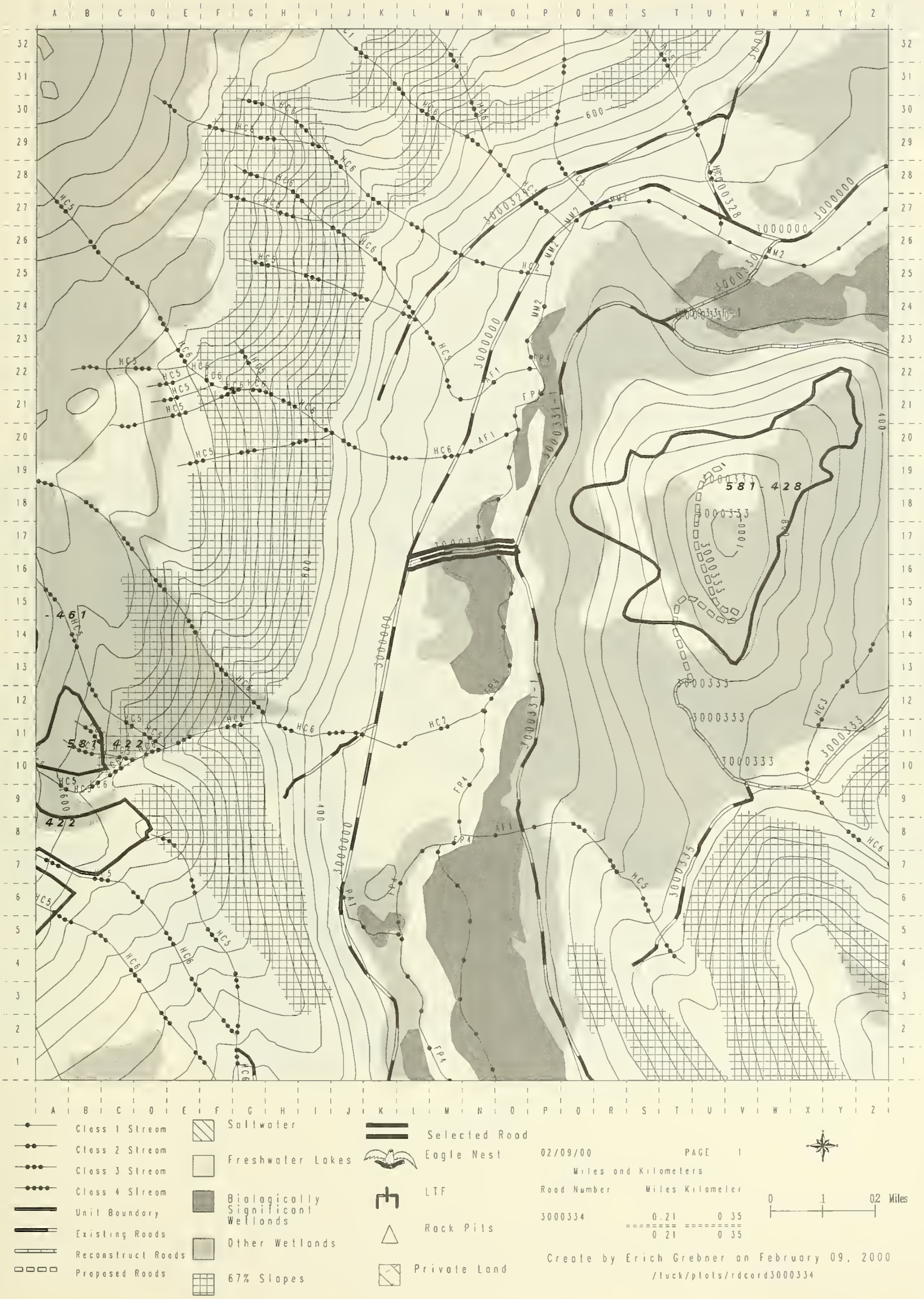
A) MP: 0.36 AHMU : Class II/III Channel Type: HC3 BF width: 20.0 ft. BF depth:

Gradient %: 25 Structure: 60" CMP Passage: no Timing dates: 6/15 to 9/1 Substrate:

Narrative: Roadcon found no fish and barrier (3.2 ft. outlet perch); this crossing is Class II downstream and Class III upstream.

Road #: **3000333** Map #: Craig D-3 NE Aerial Photo: Yr. 1991 Line: 27N Photo #'s: 1090-108

Luck Lake Project Area ROD Road Card 3000334



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000334 Beginning Terminus MP 0.00 Ending Terminus MP 0.21

Existing Construction Beginning MP 0.00 Length 0.21

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale N/A
Intended Purpose and Use:

AFRPR Post Sale Status: Closed

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Decommission road.
Prohibit:
Access Restriction Devices: Bridge is removed at MP 0.15.

Travel Management Narrative:
3000334 is not needed. It connects roads 3000331 and 3000000, which are already connected by 3000330. Decommission this road, remove any culverts and rehabilitate streams or riparian areas. Evaluate obliteration vs. alder removal and siltation impacts. Remove from forest transportation inventory.

District Ranger Approval (signature):_______________________ Date:_______________

Design Narrative Information:
Existing Road 14' wide; Design speed 10 M.P.H.; max. grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
No concerns. Alternate access is provided along roads 3000331 and 3000000.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

Soils/Water:
Road 3000334 is currently alder covered and bridge is pulled. Road condition survey crews found no erosion problems with this road. Evaluate proposed decommission plans for sediment potential (BMP's 14.22, 14.24, and 14.9). Timing is likely be required for decommissioning work (if needed) BMP 14.6.

Road Location Narrative:
Existing road

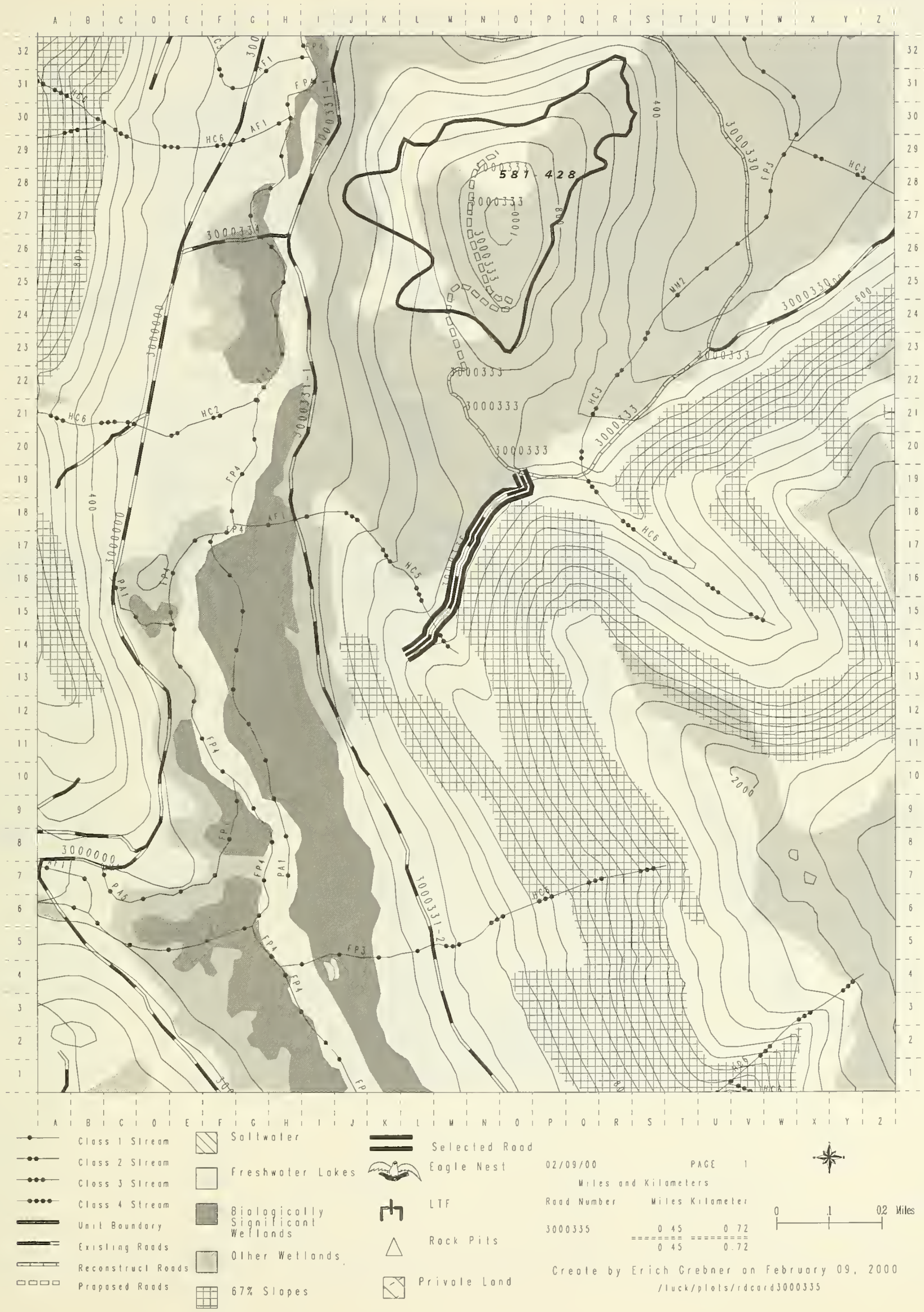
Wetlands Avoidance:
Existing road.

Stream Crossings:
One Class I, B/W stream crossing (pulled bridge) SW Fork Luck Creek (ADF&G Catalogued #106-10-10300-0010-2070 **identified by Roadcon.** Stream crossings are from beginning to end of existing road segment (EOP at intersection with 3000000 road).

A) MP: 0.15 AHMU: Class I, B/W Channel Type: MM2 BF width: BF depth:
Gradient %: Structure: Pulled Bridge Passage: Yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon found Class I, pulled bridge on mainstem **SW Fork Luck Creek** (ADF&G #106-10-10300-0010-2070.

Road #: **3000334** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line L26N Photo #'s: 1090-208

Luck Lake Project Area ROD Road Card 3000335



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000335 Beginning Terminus MP 0.00 Ending Terminus MP 0.45

Existing Construction Beginning MP 0.00 Length 0.45

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Tributary to 3000330, which will be stored by removing a bridge on road 3000330.

Travel Management Narrative:
Existing road is overgrown with alders. No anticipated access required for management activities for next 30 years. Field evaluate need to remove drainage structures.

District Ranger Approval (signature):________________ Date:________________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch. Existing road is alder covered.

Timber/Logging Systems:
No concerns.

Silviculture:
No concerns. Road 3000335 provides access to the upper portion of stand 58104-508 which has been precommercially thinned. The road should not be decommissioned. Inactive status is appropriate. Commercial thinning is possible in approximately 30 years

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

Soils/Water:
Existing road is alder covered and undriveable. Road is planned for storage (BMP 14.22). Field evaluate any proposed storage plans for sediment potential (BMP 14.9). Maintain existing alder cover to the extent practicable (BMP 14.8).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

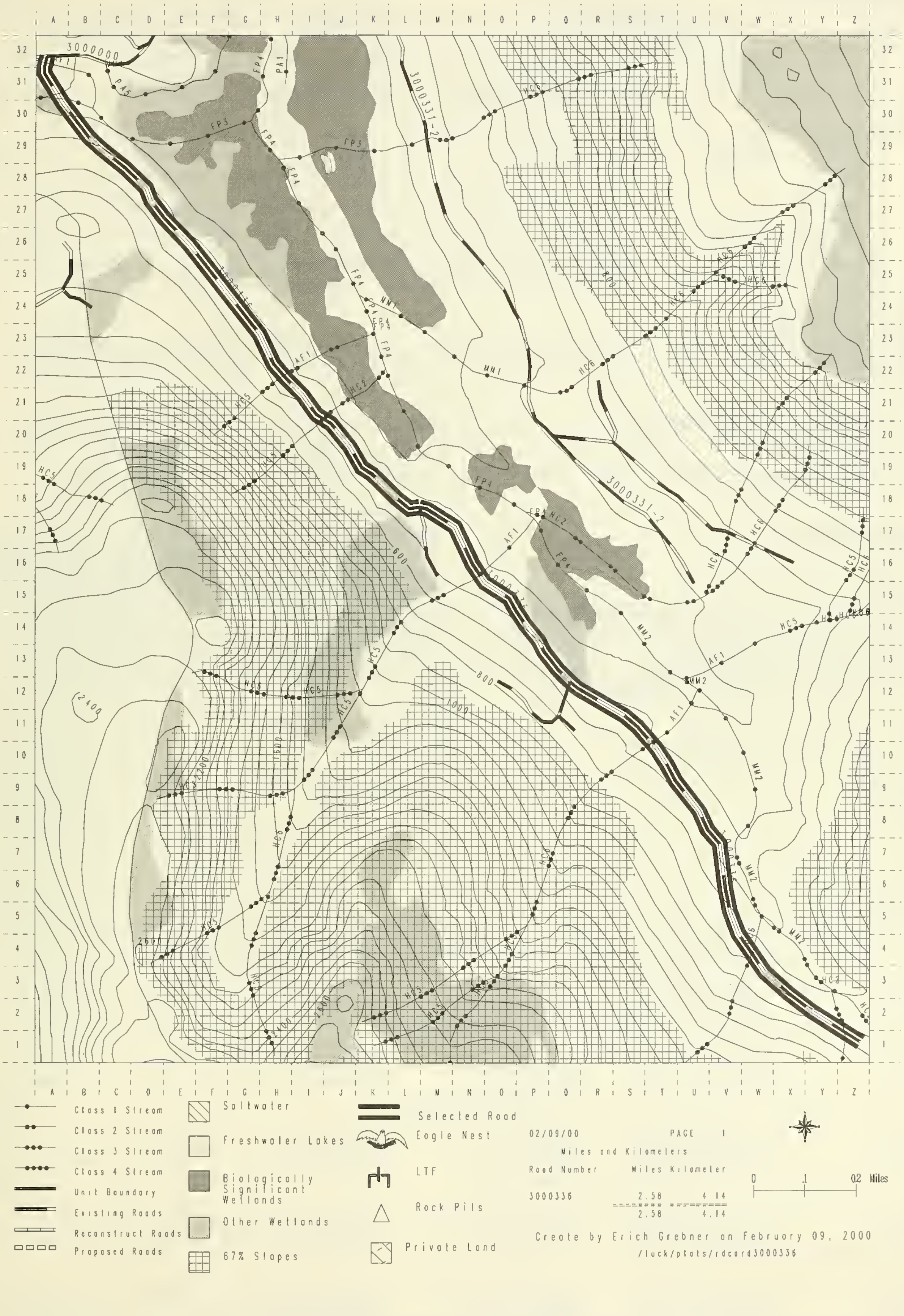
Stream Crossings:
One Class III O/W stream crossing was identified by **GIS interpretation.** Stream crossings are based from beginning to end of existing road segment.

A) MP unknown	AHMU: Class III, O/W	Channel Type: HC5	BF width:	BF depth:
Gradient %:	Structure:	Passage: no	Timing dates: none	Substrate:

Narrative: Class III O/W as interpreted by GIS.

Road #: **3000335** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line L26N Photo #'s: 1090-208

Luck Lake Project Area ROD Road Card 3000336



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3000336 Beginning Terminus MP 0.00 Ending Terminus MP 2.58

Existing Construction Beginning MP 0.00 Length 2.58

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1; N/A Active Sale N/A Post Sale I; N/A
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive MP 0.00 to MP 2.05; Closed MP 2.05 to MP 2.58

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place road in storage to OGR boundary (approximately MP 2.05). Decommission road beyond OGR boundary.
Prohibit:
Access Restriction Devices: Construct barrier ditch at beginning of road approximately 3 years after commencement of this project for short-term access associated with recent past harvest activities.

Travel Management Narrative:
Road is currently marginally driveable due to heavy alder growth. After 3 year short term access period, field evaluate the need for drainage structure removal vs. potential adverse impacts associated with removal of the existing vegetative growth in both portions of the road being stored and decommissioned.

District Ranger Approval (signature):____________________ Date:__________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
This road accesses several precommercial thinning opportunities recently evaluated. Stands 58103-531 (120 acres), 513 (73 acres), 532 (58 acres) and 514 (70 acres) could be precommercially thinned in the near future. Postpone access restrictions until after precommercial thinning. Coordinate road closure timing with precommercial tree thinning activities.

Wildlife:
MP 2.05 to end of road is located in OGR.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology, and karst resource concerns.

Soils/Water:
Existing road is alder covered but marginally driveable. Road is planned for storage (BMP 14.22). Decommissioning planned for last half mile in OGR. Drainage structures prone to plugging should be removed or ditched. All structures left in place should be waterbarred (BMP 14.9). Maintain existing alder cover to the extent practicable (BMP 14. 8). Reestablish fish passage if blocked by road (BMP 12.5 and 404f guidelines). Timing may be necessary for culvert removal, see fisheries section (BMP 14.6). Discourage vehicular access (BMP 14.22).

Road Location Narrative:
Existing Road:

Wetlands Avoidance:
Existing road.

Stream Crossings:
Three Class I, one Class III, three Class IV O/W, one Class IV G/W stream crossings **based on Roadcon + GIS interpretation.** Roadcon surveyed up to MP 2.05; 2.05 to 2.58 is GIS interpretation. The stream crossings listed below are from beginning to end of existing road.

A) MP: 0.00 AHMU: Class I Channel Type: AF1 BF width: 7.0 ft. BF depth:
Gradient %: Structure: 28`` CMP Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: This stream is in close proximity to catalogued steelhead and Coho habitat.

B) MP: 0.17 AHMU: Class I Channel Type: FP3 BF width: 7.0 ft. BF depth:
Gradient %: Structure: 48`` CMP Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: ADF&G # 106-10-10300-0010-2070-3030, tributary to SW Fork Luck Creek.

C) MP: 0.66 AHMU: Class IV, G/W Channel Type: HC5 BF width: 3.0 ft. BF depth:
Gradient %: Structure: 18`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 18`` CMP; channel is de-watered by clear-cut.

D) MP: 1.20 AHMU: Class IV, O/W Channel Type: HC5 BF width: 4.0 ft. BF depth:
Gradient %: Structure: 24`` CMP Passage: no Timing dates: 7/15 to 8/15 Substrate:
Narrative: Class IV upstream; classified by roadcon.

E) MP: 1.38 AHMU: Class I Channel Type: HC2 BF width: 7.0 ft. BF depth:
Gradient %: Structure: 72`` CMP Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: Class III upstream and 1.2 ft. outlet perch; near catalogued steelhead and Coho habitat.

Road No. 3000336

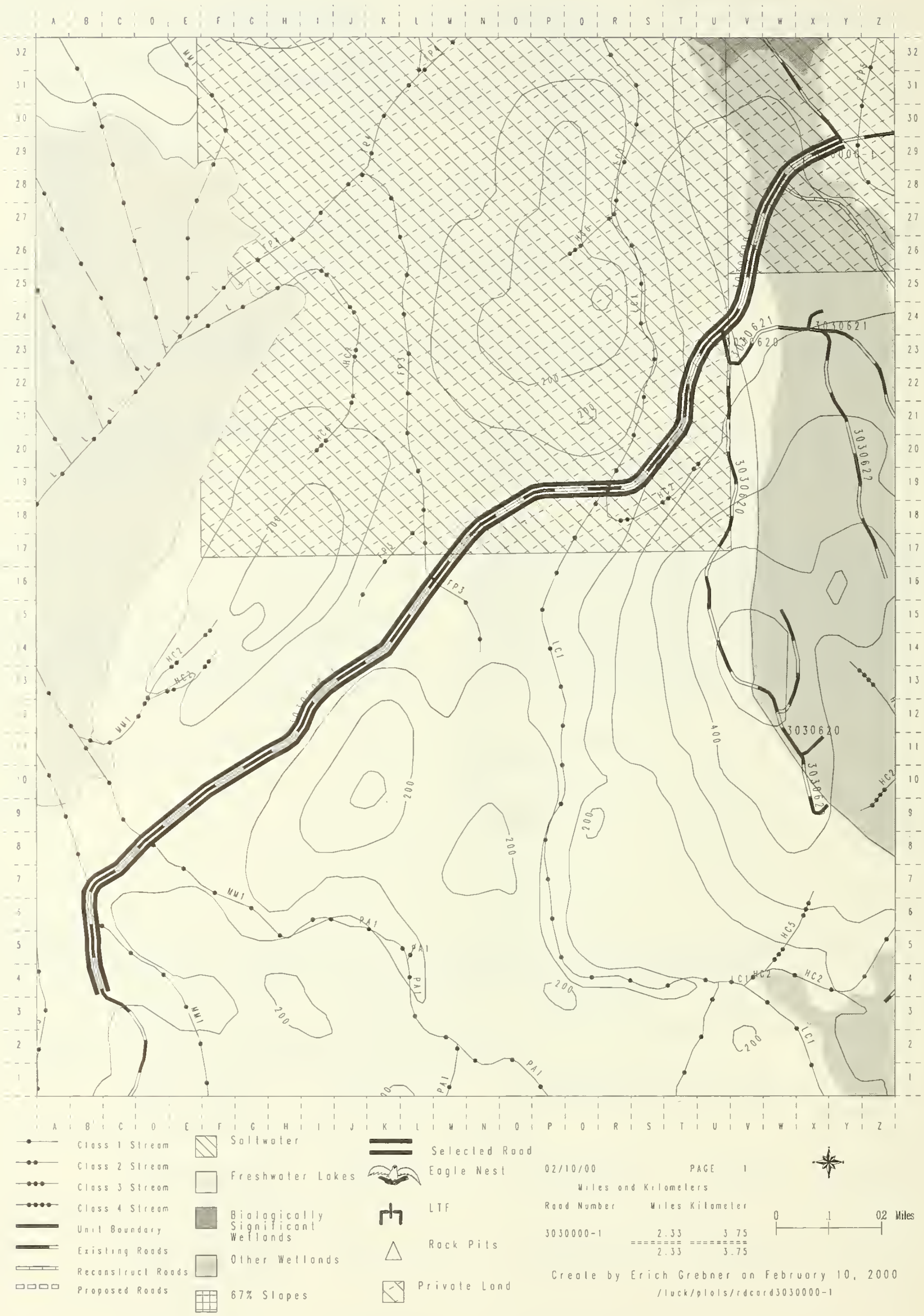
F) MP: 1.84 AHMU: Class III Channel Type: HC5 BF width: 7.0 ft.
BF depth:
Gradient %: Structure: 48`` CMP Passage: no Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon found 2.0 ft. perch at 48`` CMP with Class I below; this stream is near catalogued steelhead and Coho habitat.

G) MP: ~2.35 AHMU: Class IV, O/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: Passage: no Timing dates: none Substrate:
Narrative: This is a water quality stream identified by GIS; roadcon was unfinished to this point.

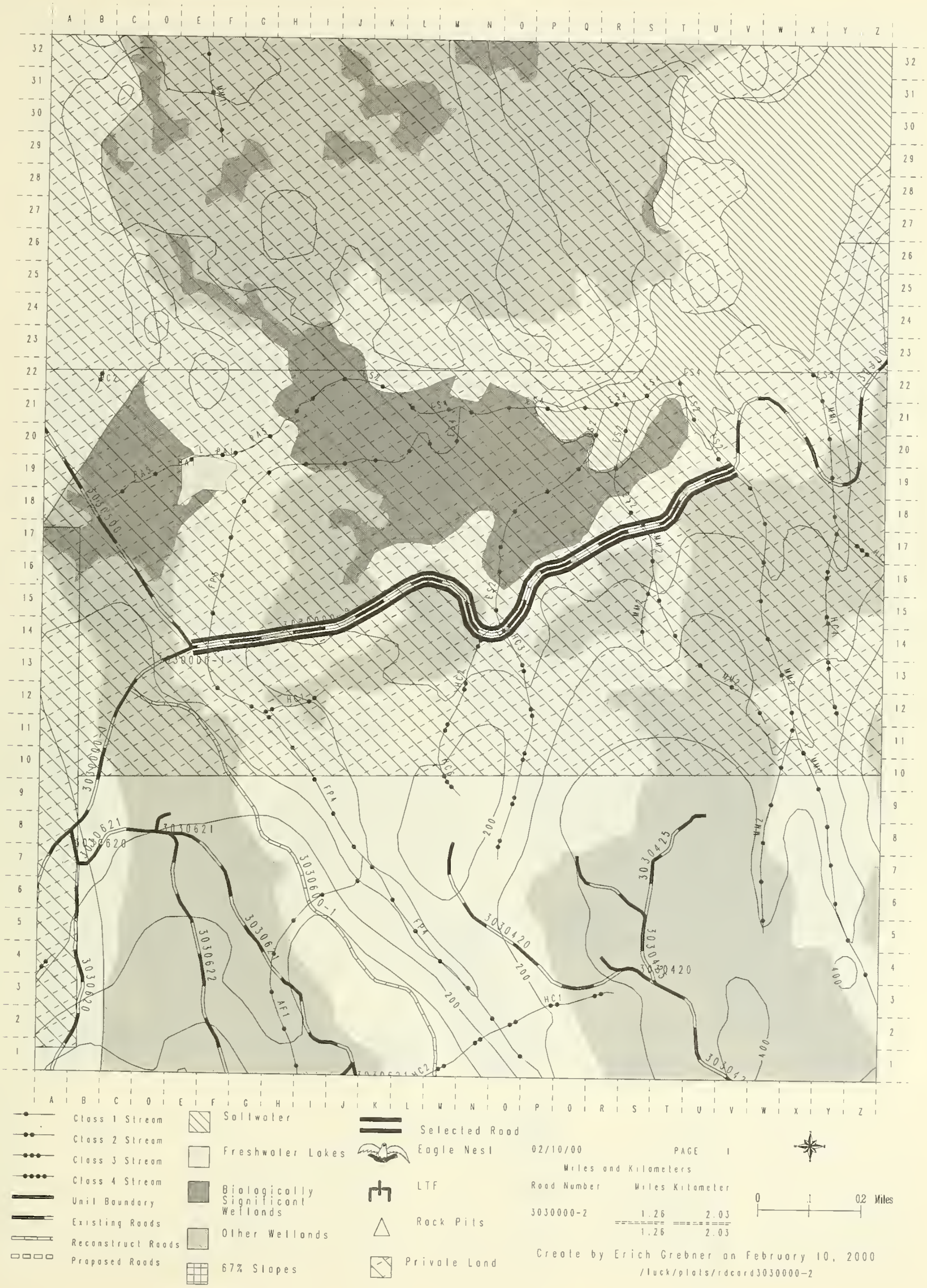
H) MP: ~2.53 AHMU: Class IV O/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: Passage: no Timing dates: none Substrate:
Narrative: This is a water quality stream identified by GIS; roadcon was unfinished to this point.

Road #:**3000336** Map #: Craig D-3 NE &SE Aerial Photo: Yr 91 Line: 27 Photo #s: 1090-109,110
``

Luck Lake Project Area ROD Road Card 3030000-1

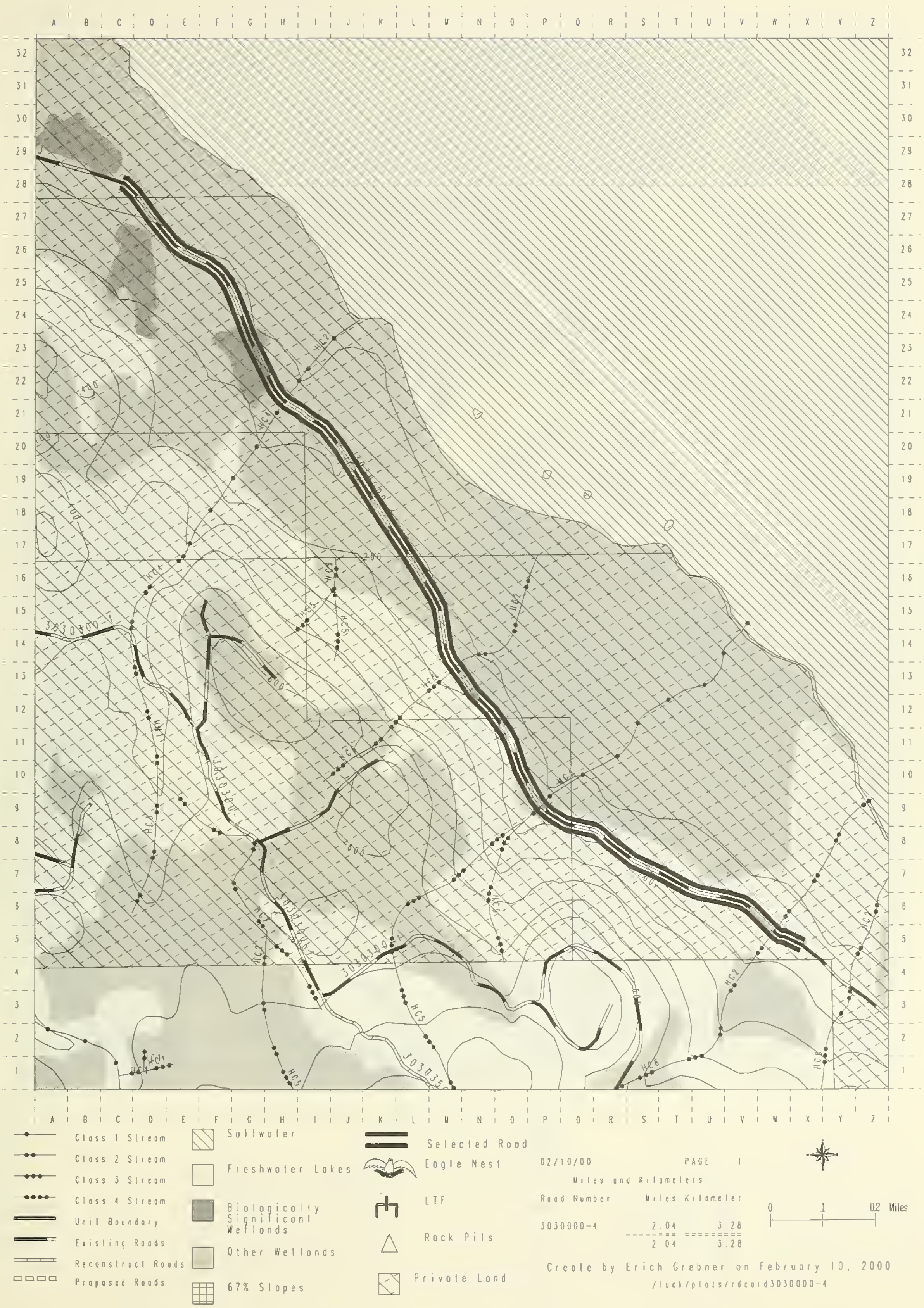


Luck Lake Project Area ROD Road Card 3030000-2

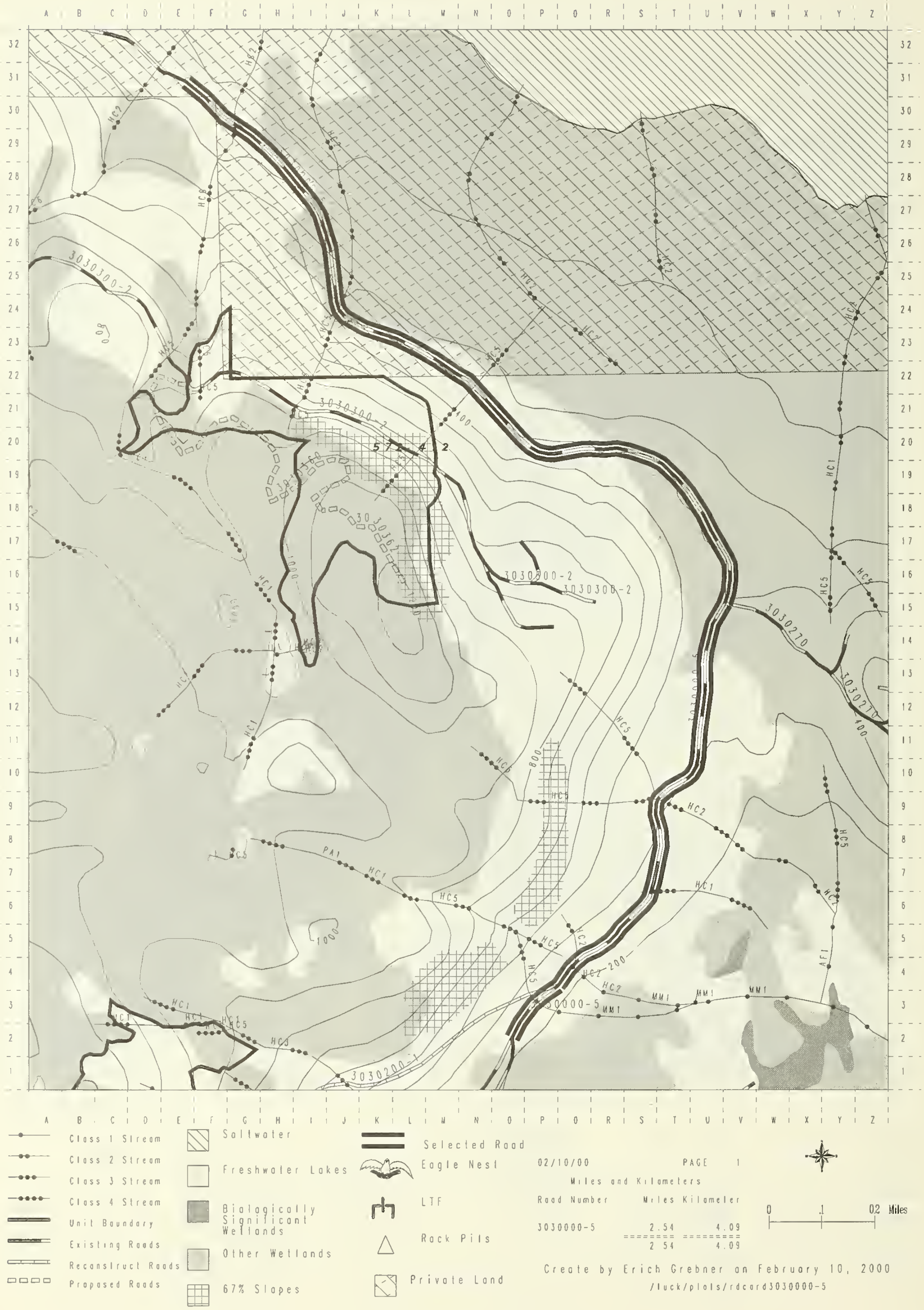


Luck Lake Project Area ROD Road Card 3030000-3

Luck Lake Project Area ROD Road Card 3030000-4



Luck Lake Project Area ROD Road Card 3030000-5



Luck Lake Project Area ROD Road Card 3030000-6

Luck Lake Project Area ROD Road Card 3030000-7

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030000-1	Beginning Terminus MP 11.73	Ending Terminus MP 14.06
Road No. 3030000-2	Beginning Terminus MP 10.47	Ending Terminus MP 11.73
Road No. 3030000-3	Beginning Terminus MP 7.94	Ending Terminus MP 10.47
Road No. 3030000-4	Beginning Terminus MP 5.90	Ending Terminus MP 7.94
Road No. 3030000-5	Beginning Terminus MP 3.36	Ending Terminus MP 5.90
Road No. 3030000-6	Beginning Terminus MP 1.91	Ending Terminus MP 3.36
Road No. 3030000-7	Beginning Terminus MP 0.00	Ending Terminus MP 1.91

Existing Construction Beginning MP 0.00 Length 14.06

Road Management Objectives:
Funct. Class C Traffic Service Level C Hwy. Safety Act Yes Design Veh. LT
Critical Veh. LB Maint. Level: 3 Active Sale 3 Post Sale 3
Intended Purpose and Use: Inter community commerce, forest administration, and recreation.

AFRPR Post Sale Status: Active

Travel Management Strategy:
Encourage: All vehicle access. Keep road open.
Accept:
Discourage:
Eliminate:
Prohibit:
Access Restriction Devices: None.

Travel Management Narrative:
Existing road serves as a community connection to other communities, state ferry system, and general forest access.

District Ranger Approval (signature):________________________________ Date:__________________

Design Narrative Information:
Existing road width is 14' to 16', depending on the segment; design speed 30MPH; Max 10% grade.

Timber/Logging Systems:
No concerns.

Silviculture:
No concerns. This road will remain open for all vehicle access. Treatment and monitoring activities will not be impaired.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

Soils/Water:
Existing road connects community of Coffman Cove to the rest of Prince of Wales. The road receives regular maintenance (BMP 14.20). Federal Highways is currently considering upgrading a portion of the 3030 road to improve community access. Several watershed rehabilitation opportunities on streams and alluvial fans have been identified along this route. Continue participation in the Federal highways planning process to improve watershed condition (BMP's 14.2, 14.8, 14.9, and 12.3).

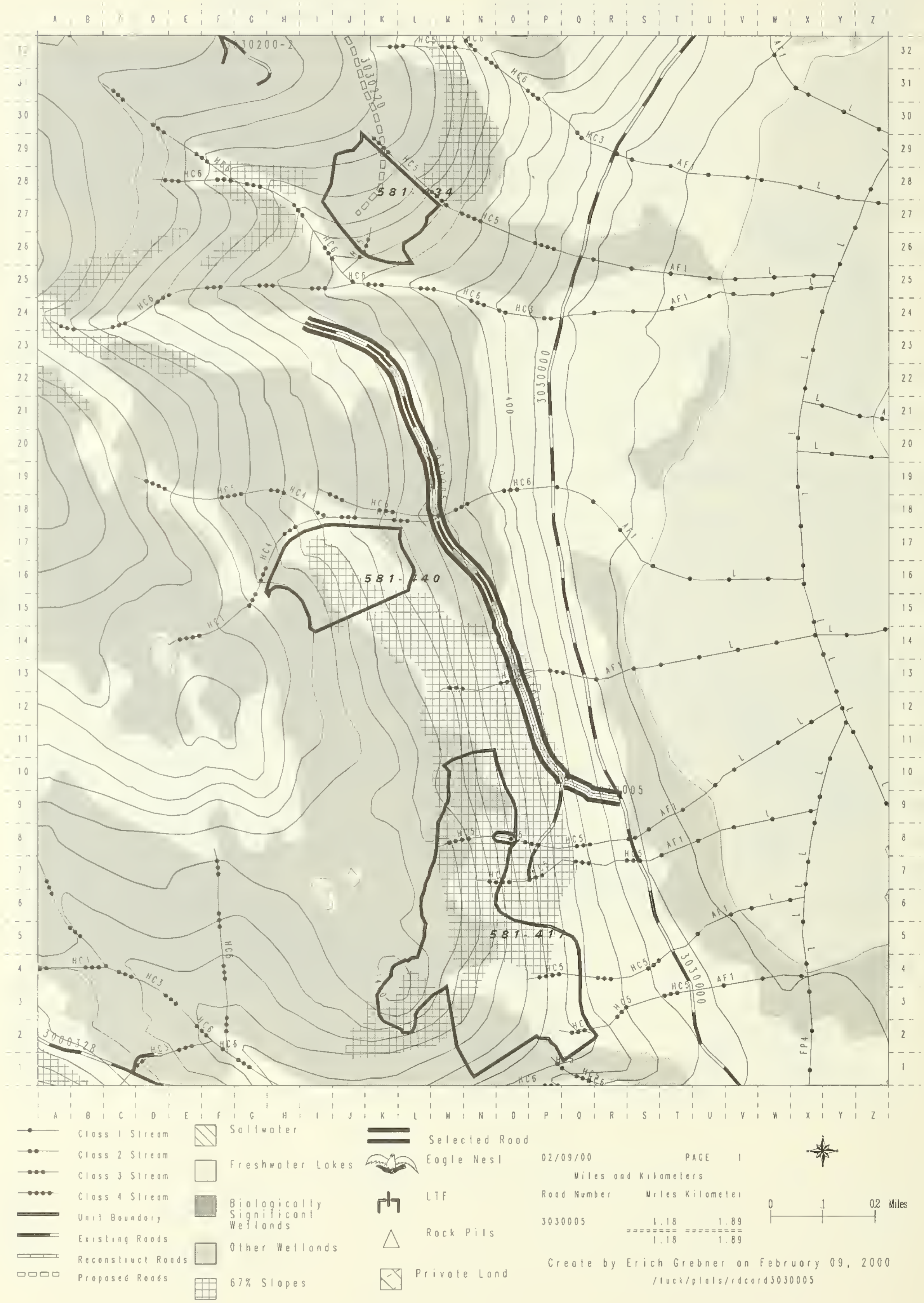
Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Stream Crossings:
This road includes numerous stream crossings. Crossing information is available on the roadcon spreadsheet in the planning record.

Road #: **3030000** Map #: Craig D-3 NE	Aerial Photo: Yr. 91	Line	L25N	Photo #'s: 990-73,74,75
			L25N	690-155
			L26N	1090-217,218
			L27N	1090-102-101
			L27N	1090-03,104
			L27N	1090-105,106

Luck Lake Project Area ROD Road Card 3030005



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030005 Beginning Terminus MP 0.00 Ending Terminus MP 1.18

Reconstruction	Beginning MP 0.00	Length 0.49
Existing Construction	Beginning MP 0.49	Length 0.69

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale I
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Road is overgrown with alders.

Travel Management Narrative:
Existing road is overgrown with alders. No anticipated access required for management activities for next 30 years. Field evaluate need to remove drainage structures.

District Ranger Approval (signature):________________________________ Date:____________________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft. ditch. Existing road is alder covered.

Timber/Logging Systems:
No concerns.

Silviculture:
No concerns. Young growth stands accessed by 3030005 have been precommercially thinned. This road should not be decommissioned. Inactive status is appropriate. Stands 58101-511 and 521 will be assessed for commercial tree thinning in approximately 30 years.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

Soils/Water:
Existing road is alder covered and not driveable. Road is planned for storage (BMP 14.22). Drainage structures prone to plugging should be removed or ditched. All structures left in place should be waterbarred (BMP 14.9). Maintain existing alder cover to the extent practicable (BMP 14.8).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Stream Crossings:
Two Class III O/W stream crossings according to **GIS interpretation and unit recon**. The stream crossings are based from beginning to end of existing road segment.

A) MP unknown	AHMU: Class III, O/W	Channel Type: HC5	BF width:	BF depth:
Gradient %:	Structure:	Passage: no	Timing dates: none	Substrate:

Narrative: Class III O/W according to GIS interpretation.

B) MP unknown	AHMU: Class III, O/W	Channel Type: HC6	BF width:	BF depth:
Gradient %:	Structure:	Passage: no	Timing dates: none	Substrate:

Narrative: This Class III O/W flows from the north boundary of proposed unit 581-440 and is a large HC6 channel.

Road #: **3030005** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line L27N Photo #'s: 1090-104

Luck Lake Project Area ROD Road Card 3030100-1

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030100-1 Beginning Terminus MP 0.0 Ending Terminus MP 1.24

Existing Construction Beginning MP 0.00 Length 1.24

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 3/2 Active Sale 3/2 Post Sale 3/2
Intended Purpose and Use:

AFRPR Post Sale Status: Active MP 0.00 to 1.24.

Travel Management Strategy:
Encourage: All access. MP 0.00 to 1.00
Accept: High clearance vehicles MP 1.00 to 1.24
Discourage:
Eliminate:
Prohibit:
Access Restriction Devices: None.

Travel Management Narrative:
Maintain road for passenger vehicle to the 3030105 road for general access to the Luck Lake day use recreation area. Maintain high clearance vehicle use to the junction of the 3030110 road Repair ditches and drainage from Eagle Creek bridge to MP 1.24.

District Ranger Approval (signature):_____________________ Date:_____________

Design Narrative Information:
Existing road 14' wide, Design speed 10 MPH.; Max. grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
Moderate potential for future windthrow salvage and minor future treatment needs for precommercial thinning. Essential reforestation treatments will be accomplished with helicopter access to units in VCU 582, and units 581-420, 423, 444, 445, 446, 447, 448, and 449 due to planned closure methods on road 3030110. Current treatment opportunities involve young growth stands 58102-502 (92 acres), 58102-050 (treated with canopy gaps and part of which may already be too big for precommercial thinning treatment). Future opportunities include young growth stands accessed by this and other tributaries (6 young growth stands which would not be evaluated for thinning needs for 15 to 20 years).

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology, and karst resource concerns.

Soils/Water:
Minor reconstruction is necessary to reestablish road drainage east of the Eagle Creek Bridge (BMP 14.9). Ditch cleaning should avoid placement of excavated material in wetlands or riparian areas (BMP 14.12, 12.6 and 12.5). Road is planned for storage beyond Eagle Creek following harvest, (BMP 14.22). Remove all structures prone to plugging and waterbar the rest (BMP 14.5 & 14.9). Maintain road up to bridge (BMP 14.20).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Stream Crossings:
Two Class I and three Class II stream crossings **based on Roadcon.** The stream crossings are listed from beginning to end of existing road segment.

A) MP: 0.12 AHMU: Class IIT Channel Type: AF2 BF width: 1.0 ft BF depth:
Gradient %: Structure: 18`` CMP Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: Close proximity to Class I Coho habitat. Roadcon observed Dolly Varden.

B) MP: 0.25 AHMU: Class IIT Channel Type: AF1 BF width: 1.0 ft. BF depth:
Gradient %: Structure: 18`` CMP Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon sampled a Dolly Varden; Class I Coho habitat close proximity.

C) MP: 0.36 AHMU: Class IIT Channel Type: AF2 BF width: : 8.0 ft. BF depth:
Gradient %: Structure: 48`` CMP Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon sampled cutthroat and Dolly Varden; Class I Coho habitat close proximity.

D) MP: 0.75 AHMU: Class I Channel Type: PA2 BF width: : 7.0 ft. BF depth:
Gradient %: Structure: 60`` CMP Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon found Coho; close proximity to steelhead habitat.

E) MP: 1.04 AHMU: Class I Channel Type: FP5 BF width: : BF depth:
Gradient %: Structure: Modular Bridge; 100 ft. Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: Eagle Creek; ADF&G# 106-10-10300-3012.

Road #:**3030100-1** Map #: Craig D-3 NE Aerial Photo: Yr 91 Line: 27N Photo #'s: 1090-103, 105

Luck Lake Project Area ROD Road Card 3030100-2

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030100-2 Beginning Terminus MP 1.24 Ending Terminus MP 3.30

Existing Construction Beginning MP 1.24 Length 2.06

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use:

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage
Prohibit:
Access Restriction Devices: Barrier ditch near junction of the 3030110 road. Locate barrier ditch to provide for turnaround area. Evaluate integrity of drainage structures. Remove malfunctioning drainage structures prior to storage.

Travel Management Narrative:
This portion of the 3030100 road is heavily aldered, however is driveable for approximately 1.75 miles.

District Ranger Approval (signature):________________________ Date:____________

Design Narrative Information:
Existing road 14' wide, Design speed 10 MPH.; Max. grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
Access to required reforestation work will be by foot or helicopter. Current needs for precommercial treatment of young growth stands along this access road have been satisfied. Most future treatment opportunities will likely be commercial and will require road reconstruction.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:
No known minerals, geology, and karst resource concerns.

Soils/Water:
Existing road is alder covered but driveable. Drainage structures prone to plugging should be removed or ditched. All structures left in place should be waterbarred (BMP 14.9). Maintain existing alder cover to the extent practicable (BMP 14.8). Reestablish resident fish passage if blocked by road (BMP 12.5 and 404f guidelines). Timing may be necessary for culvert removal, see fisheries section (BMP 14.6). Restrict vehicular access (BMP 14.22) storage.

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Stream Crossings:
One Class I, one Class II, two Class IV O/W, and one Class IV G/W stream crossing **based on Roadcon.** The stream crossings are listed from beginning to end of existing road segment.

A) MP: 1.30 AHMU: Class I Channel Type: MM1 BF width: 8.0 ft. BF depth:
Gradient %: Structure: 36`` CMP Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon sampled Coho here; close proximity to catalogued Coho, steelhead, sockeye, pink, chum, stream.

B) MP: 1.53 AHMU: Class IIT Channel Type: MM1 BF width: 3.0 ft. BF depth:
Gradient %: Structure: 24`` CMP Passage: yes Timing dates: 7/15 to 8/15 Substrate:
Narrative: Roadcon sampled cutthroat here; close proximity to catalogued Coho, steelhead, sockeye, pink, chum, stream.

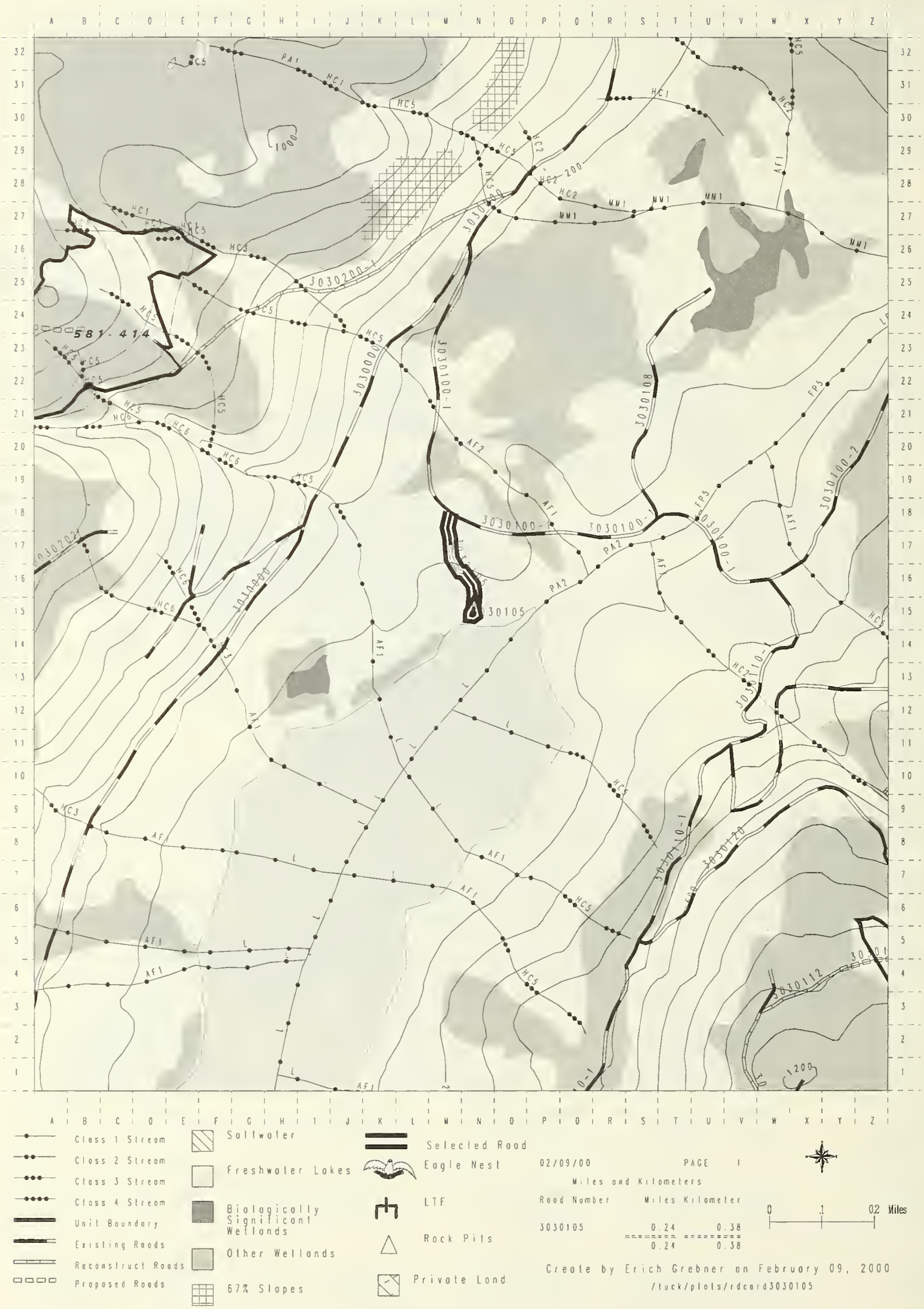
C) MP: 1.56 AHMU: Class IV, G/W Channel Type: HC2 BF width: 1.5 ft. BF depth:
Gradient %: 6 Structure: 18`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found 18`` CMP and is a Class IV stream.

D) MP: 3.02 AHMU: Class IV, O/W Channel Type: HC5 BF width: 7.0 ft. BF depth:
Gradient %: Structure: 36`` CMP Passage: no Timing dates: none Substrate:
Narrative: Class IV, 36`` CMP with 6.0 ft. outlet perch; flows into ocean.

E) MP: 3.13 AHMU: Class IV, O/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: barrier ditch Passage: no Timing dates: none Substrate:
Narrative: Class IV, stream is barrier ditch and flows into ocean downstream of crossing.

Road #:**3030100-2** Map #: Craig D-3 NE Aerial Photo: Yr. 1991 Line: 27N Photo #'s: 1090-103

Luck Lake Project Area ROD Road Card 3030105



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030105   Beginning Terminus MP 0.00   Ending Terminus MP 0.24

Existing Construction   Beginning MP 0.00   Length 0.24

Road Management Objectives:
Funct. Class L   Traffic Service Level C   Hwy. Safety Act Yes   Design Veh. LT
Critical Veh. LB   Maint. Level: 3   Active Sale N/A   Post Sale 3
Intended Purpose and Use: Recreational activities.

AFRPR Post Sale Status: Active

Travel Management Strategy:
Encourage: All vehicle access. Keep road open.
Accept:
Discourage:
Eliminate:
Prohibit:
Access Restriction Devices: None.

Travel Management Narrative:
3030105 accesses the Luck Lake day use area.

District Ranger Approval (signature):______________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch. Existing road is alder covered.

Timber/Logging Systems:
No concerns.

Silviculture:
No concerns. This road will remain open and accessible by all vehicles.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

Soils/Water:
The existing road is open and driveable and provides access to the Luck Lake recreation site. Keep open (BMP 14.22). The existing route is located on floodplain and alluvial soils. Maintain crossing structure (BMP 14.2 and 14.9).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Stream Crossings:
One Class IIT B/W **located by Roadcon**. Stream crossings are from beginning to end of existing road segment.

A) MP 0.00   AHMU: Class IIT, B/W   Channel Type: MM1   BF width: 2.0 ft.   BF depth:
Gradient %:   Structure: 24`` CMP   Passage: Yes   Timing dates: 7/15 to 8/15   Substrate:
Narrative: Roadcon found 24`` CMP with cutthroat and Dolly Varden trapped.

Road #: **3030105** Map #: Craig D-3 NE   Aerial Photo: Yr. 91 Line L27N   Photo #'s: 1090-103

Luck Lake Project Area ROD Road Card 3030108

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030108   Beginning Terminus MP 0.00   Ending Terminus MP 0.51

Existing Construction   Beginning MP 0.00   Length 0.51

Road Management Objectives:
Funct. Class L   Traffic Service Level D   Hwy. Safety Act NO   Design Veh. LT
Critical Veh. LB   Maint. Level: 1   Active Sale N/A   Post Sale N/A
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Closed

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Decommission road.
Prohibit:
Access Restriction Devices: Barrier ditch currently in place at MP 0.20

Travel Management Narrative:
3030108 is currently undriveable due to a barrier ditch at MP 0.20. Decommission road to mitigate impacts to wildlife and fish resources.

District Ranger Approval (signature):_______________________ Date:_______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
Road access is not needed for future treatments in young growth stand 58101-9501. Foot access of about 0.5 miles is required to reach the young stand for reforestation purposes and future treatments.

Wildlife:
Road enters proposed OGR.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

Soils/Water:
Existing road is barrier ditched and not driveable. Decommissioning is planned (BMP 14.22). This road is located on flat terrain with no stream crossings. Consider grass seeding road surface (BMP 14.8).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Stream Crossings: Roadcon found this road segment barrier ditch at MP 0.02. No fisheries concerns.

Road #: **3030108** Map #: Craig D-3 NE   Aerial Photo: Yr. 91 Line L27N   Photo #'s: 1090-103

Luck Lake Project Area ROD Road Card 3030110-1

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030110-1 Beginning Terminus MP 0.00 Ending Terminus MP 3.28

Existing Construction Beginning MP 0.00 Length 3.28

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage
Prohibit:
Access Restriction Devices: Construct a barrier ditch at the beginning of the road, locating the barrier ditch to provide a turnaround on the 3030100 road. Reconstruct ditches, remove all drainage structures and construct waterbars on steep grades to eliminate potential for plugging pipes and road wash outs.

Travel Management Narrative:
Store road for resource and economic concerns

District Ranger Approval (signature):______________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
The 3030110 road accesses timber sale units 581-445, 581-446, 582-405 and 582-406.

Silviculture:
Access will be limited to helicopter. Reforestation work required in units 581-420, 423, 444, 445, 446, 447, 448, 449, and all units in VCU 582 will require helicopter access. Minor opportunity for further silvicultural treatment (precommercial tree thinning in stands 58102-050 and 502) in immediate future may be forfeit. Future precommercial treatment (15 to 20 years future) in stands 58102-501 (11 acres), 502 (15 acres), 509 (67 acres), 572 (24 acres), 556 (14 acres) and 573 (19 acres) may be forfeit. Resource concerns may easily override treatment opportunities in both scale and intensity.

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3030000).

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology, and karst resource concerns.

Soils/Water:
Existing road is open and driveable. Reconstruction is limited to ditchline cleanout and blading. Place any excavated material on stable upland sites if available (BMP 14.12, 12.5). Road to be stored after harvest (BMP 14.22). Remove all structures prone to plugging, waterbar the rest (BMP 14.9). Consider seeding road surface (BMP 14.8).

Road Location Narrative:
Existing Road accesses units 581-420, 423, and 444.

Wetlands Avoidance:
Existing road.

Stream Crossings:
One Class II, three Class III, two Class IV O/W and one Class IV G/W stream crossings are on this road segment **based on Roadcon.** The stream crossings are listed below from the beginning to the end of the existing road segment.

A) MP: 0.26 AHMU: Class IV, O/W Channel Type: MC2 BF width: BF depth:
Gradient %: Structure: 36`` CMP Passage: no Timing dates: none Substrate:
Narrative: Class I is approximately 800 feet downstream.

B) MP: 0.28 AHMU: Class IIT Channel Type: MC2 BF width: 15.0 ft. BF depth:
Gradient %: Structure: 72`` CMP Passage: yes Timing dates: none Substrate:
Narrative: Roadcon found 72`` CMP with 1.8 ft. outlet perch; Class I is approximately 800 feet downstream.

C) MP: 1.25 AHMU: Class III Channel Type: HC5 BF width: 3.0 ft. BF depth:
Gradient %: Structure: 36`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon found 36`` CMP with no fish and 2.1 ft. outlet perch; Class I is approximately 500 feet downstream.

D) MP: 1.29 AHMU: Class IV, G/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: 18`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon found 18`` CMP with no fish; Class I is approximately 500 feet downstream.

E) MP: 1.73 AHMU: Class III Channel Type: HC5 BF width: 10.0 ft. BF depth:
Gradient %: Structure: 48`` CMP Passage: No Timing dates: none Substrate:
Narrative: Recon found 48`` CMP with 10 ft. wide channel and 2.0 ft. outlet perch.

Road No. 3030110-1

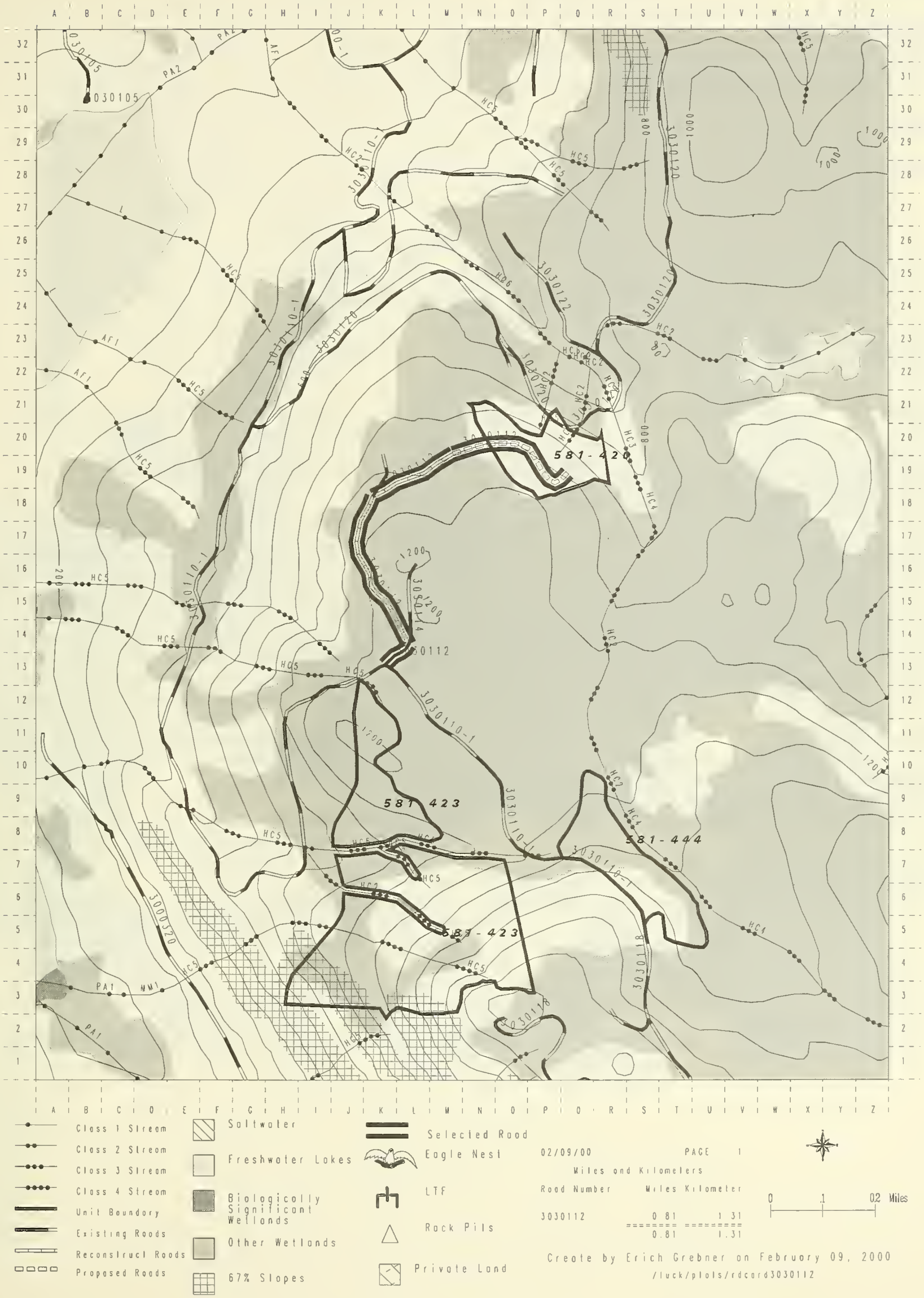
F) MP: 2.10 AHMU: Class III Channel Type: HC5 BF width: 5.0 ft.
BF depth:
Gradient %: Structure: 36`` CMP Passage: No Timing dates: none Substrate:
Narrative: Upstream of previous stream E crossing.

Road No. 3030110-1

G) MP: 2.49 AHMU: Class IV, O/W Channel Type: HC5 BF width: 4.0 ft. BF depth:
Gradient %: Structure: 36`` CMP Passage: No Timing dates: none Substrate:
Narrative: Upstream of previous stream D crossing.

Road #:3030110-1 Map #: Craig D-3NE Aerial Photo: Yr 91 Line:27N Photo #'s: 1090-104, 105

Luck Lake Project Area ROD Road Card 3030112



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030112 Beginning Terminus MP 0.00 Ending Terminus MP 0.81

Existing Construction	Beginning MP 0.00	Length	0.06
Reconstruction	Beginning MP 0.06	Length	0.49
New Construction	Beginning MP 0.55	Length	0.26

Road Management Objectives:

Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT

Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1

Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:

Encourage:

Accept:

Discourage:

Eliminate: All vehicle access. Place in storage.

Prohibit:

Access Restriction Devices: Construct barrier ditch at beginning of road. Pull pipes, create water bars, and reseed slopes. Construct water bars in sections of road crossing wetland areas.

Travel Management Narrative:
Road stored for resource and economic concerns.

District Ranger Approval (signature):________________________ Date:____________

Design Narrative Information:
Design standards are as follows: Road width 14'; Design speed 10 MPH.; Max grade 20%; Surface shot rock; minimize ditches and roll grade to drain and construct minimum standard J-hole turnouts. Build to lowest acceptable standard, as storing after harvest.

Timber/Logging Systems:
The 3030112 road accesses timber sale unit 581-420.

Silviculture:
Minor opportunities exist for future silvicultural treatment. See treatment opportunity narrative under road card for 3030110-1. Access to unit 581-420 will be by helicopter for required reforestation work.

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3030000).

Cultural:
Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:
No known minerals, geology, and karst resource concerns.

Soils/Water:
The existing 3030112 road is a low sediment risk road located on relatively flat topography. The road is open and driveable. Reconstruction consists of blading. New construction will cross the nose of a ridge through subalpine meadow and scrub-shrub forested wetlands to access unit 581-420. Unit 420 is a long sloping unit of 40 percent gradient. The existing 3030120 road accesses the very bottom corner of the proposed unit 420, but downhill yarding cannot meet soil protection requirement for the unit. Unit 420 could be helicopter yarded but this option was not considered cost effective considering the resources at risk. The wetlands at risk sit on the nose of a ridge and serve to donate water to downslope resources. Apply 33 CFR BMP's 4, 5, 6, and 14. Road 3030112 will be put in storage following timber harvest and meets the requirements for the silvicultural road exemption from the 404 permit process. Storage to consist of waterbarring (BMP 14.22).

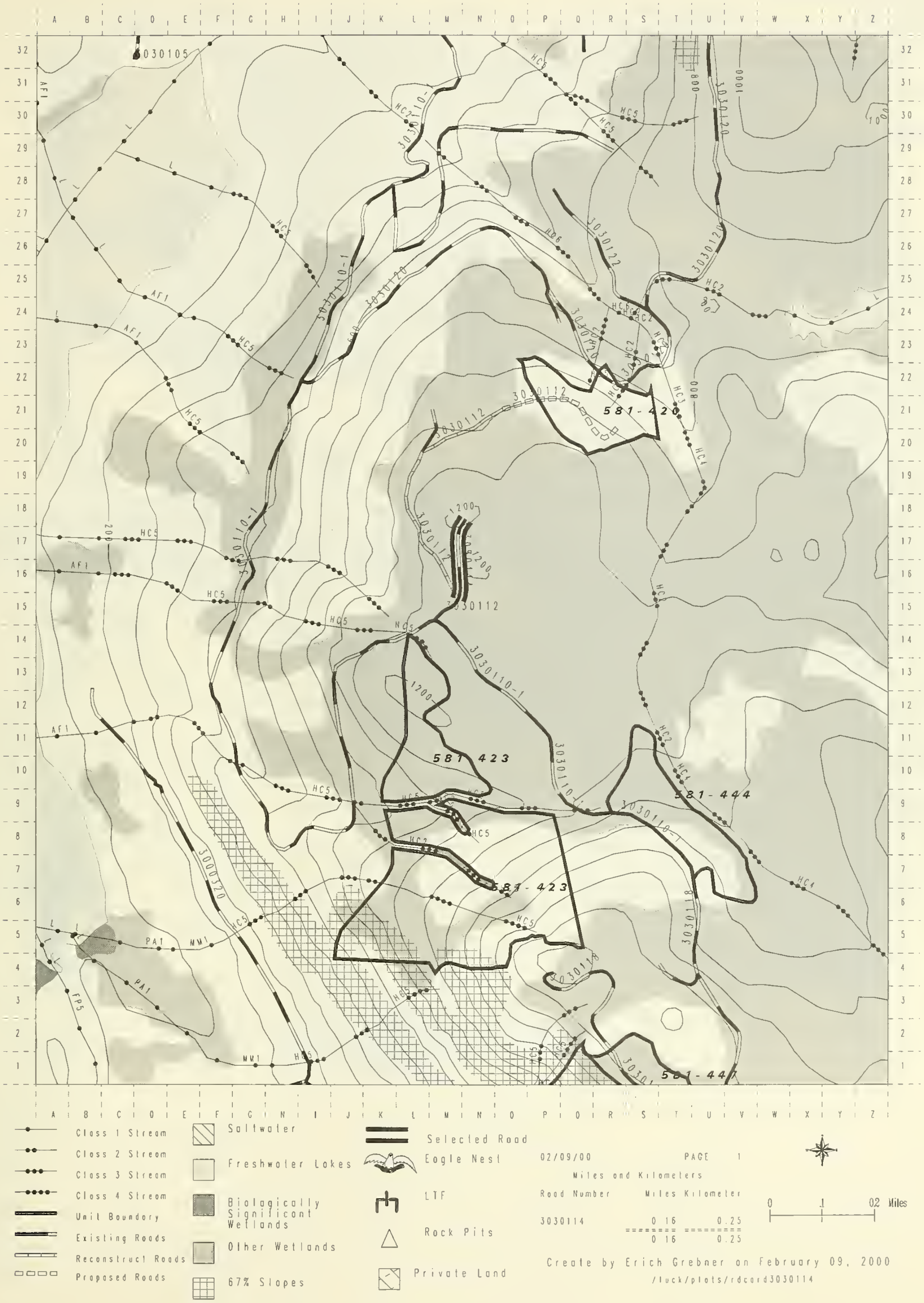
Road Location Narrative:
Road accesses the upper portion of Unit 581-420

Wetlands Avoidance:
The route avoids wetlands by running through timbered areas as much as possible. When crossing open bogs, the route is located to minimize cut sections and drainage interruption as much as possible.

Stream Crossings:
No stream crossings exist on this road segment according to GIS interpretation. No roadcon information was available.

Road #: **3030112** Map #: Craig D-3 NE Aerial Photo: Yr 91 Line:28N Photo #'s: 1090-6, 7

Luck Lake Project Area ROD Road Card 3030114



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030114 Beginning Terminus MP 0.00 Ending Terminus MP 0.16

Existing Construction Beginning MP 0.00 Length 0.16

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Tributary to 3030100, which will be stored by installing a barrier ditch at MP. 1.23 on the 3030100 road.

Travel Management Narrative:
Construct barrier ditch at beginning of road, remove culverts, and make water bar on steep grades. Close road for economic concerns.

District Ranger Approval (signature):________________ Date:________________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
This road accesses the upper portion of young growth stand 58102-572 which is currently scheduled for assessment of precommercial thinning needs in 2005. If feeder road 3030110-1 remains closed, treatment opportunity in this 25-acre stand may be forfeit. Storage of road 3030114 is appropriate due to utility in future commercial thinning opportunity in stand 58102-572.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Stream Crossings:
Roadcon found no stream crossings; no fisheries concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

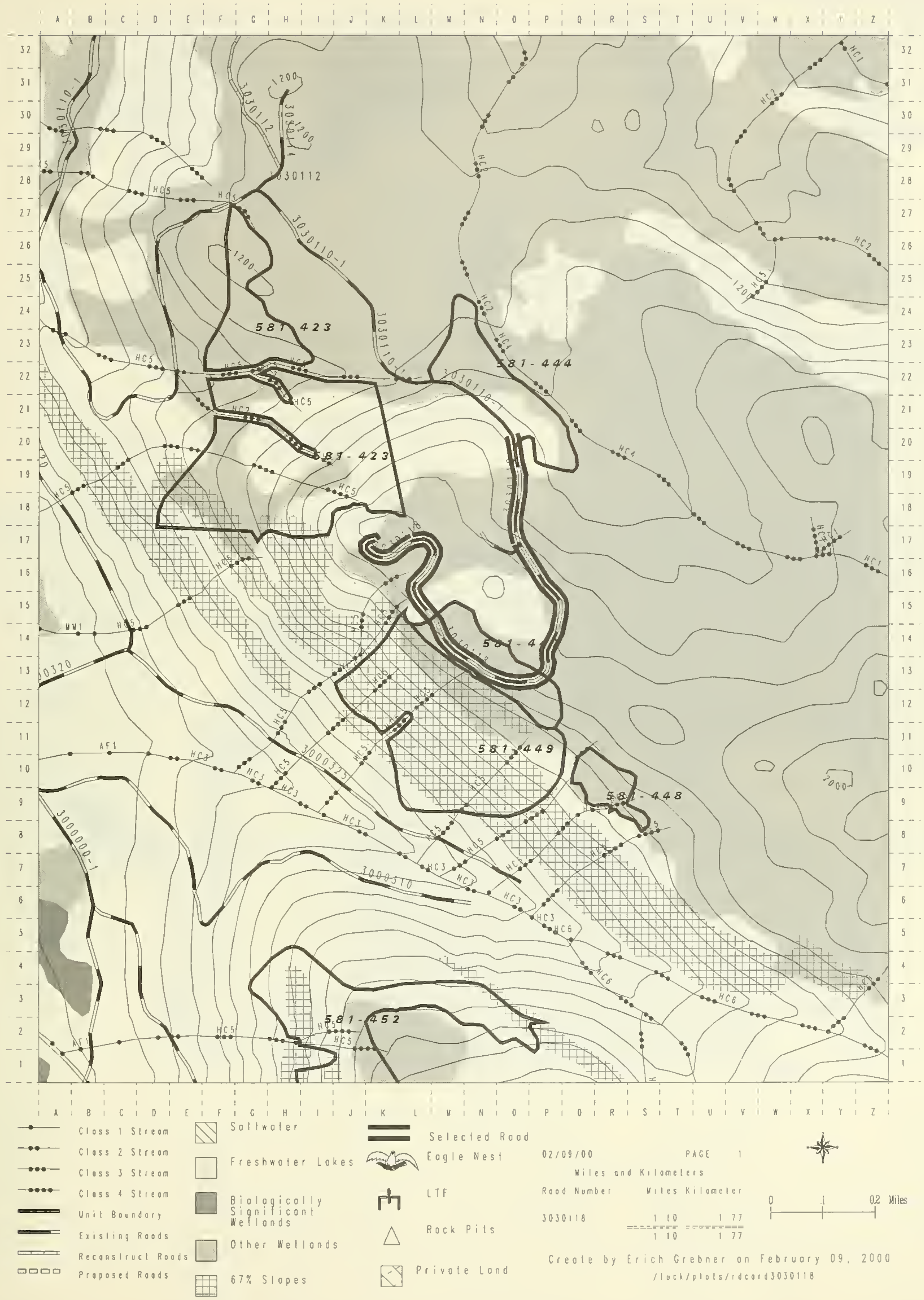
Soils/Water:
Existing road is open and driveable. Road is planned for storage (BMP 14.22). There are no crossings and no erosion problems on this road. Discourage vehicular access with a barrier ditch at the beginning of the road. Consider grass seeding road surface (BMP 14.8).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Road #: **3030114** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line L28N Photo #'s: 1090-5

Luck Lake Project Area ROD Road Card 3030118



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030118 Beginning Terminus MP 0.00 Ending Terminus MP 1.10

Existing Construction Beginning MP 0.00 Length 1.10

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage
Prohibit:

Travel Management Narrative:
Road stored for resource and economic concerns.

District Ranger Approval (signature):________________________ Date:____________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
Some potential exists for future silvicultural treatments and salvage. See narrative for opportunities under road 3030110. Current access plans will limit access to helicopter. Required reforestation work in units 581-447, 448 will be completed with helicopter access.

Wildlife:
Subsistence use area.

Visual/Recreation:
Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3030000).

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Existing road is open and driveable. No reconstruction necessary. Road to be put in storage (BMP 14.22). Waterbar all drainage structures (BMP 14.9). Consider grass seeding road surface (BMP 14.8).

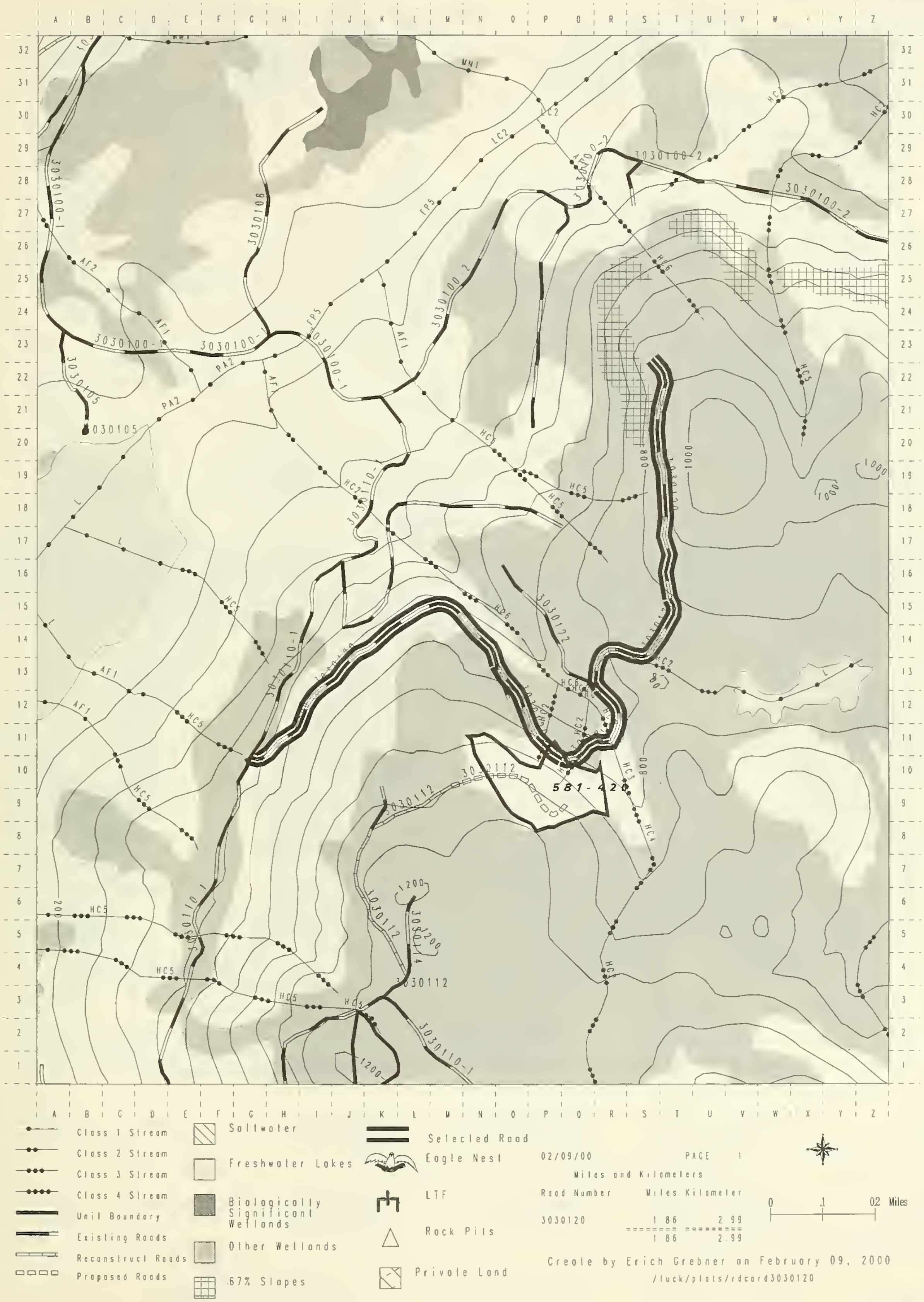
Road Location Narrative:
Existing Road accesses units 581-423, 447, 448, and 449.

Wetlands Avoidance:
Existing road.

Stream Crossings:
No known stream crossings **based on GIS interpretation**. No known fisheries concerns.

Road #: **3030118** Map #: Craig D-3 NE Aerial Photo: Yr. 79 Line 12 36 Photo #'s: 379-47 & 49
Aerial Photo: Yr. 91 Line 28N Photo #'s: 1090-6 & 7

Luck Lake Project Area ROD Road Card 3030120



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030120 Beginning Terminus MP 0.00 Ending Terminus MP 1.86

Existing Construction Beginning MP 0.00 Length 1.86

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Construct barrier ditch at beginning of road. Create water bars and reseed slopes to eliminate potential for plugging pipes and road washouts. Outslope with numerous cross drains.

Travel Management Narrative:
Road stored for resource, and economic concerns.

District Ranger Approval (signature):________________________ Date:____________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
Minor opportunity for silvicultural treatments. See narrative for road card 3030100-1 and 3030110-1. Moderate potential for salvage in the future. Access to unit 581-420 will be limited to helicopter for required reforestation work.

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3030000).

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Existing road is open and driveable. Road to be put in storage (BMP 14.22). Waterbar all drainage structures (BMP 14.8). Evaluate risk of culvert failure on large water quality stream crossing at the time of closure. At a minimum, waterbar the culvert if not pulled (BMP 14.9). Consider grass seeding road surface (BMP 14.8).

Road Location Narrative:
Existing Road accesses lower portion of unit 581-420.

Wetlands Avoidance:
Existing road.

Stream Crossings:
One Class III O/W, three Class IV O/W and one Class IV G/W streams **based on unit recon. and Roadcon**.

A) MP: 0.01 AHMU: Class IV O/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: barrier ditch Passage: No Timing dates: none Substrate:
Narrative: Roadcon found water barred crossing.

B) MP: 0.79 AHMU: Class IV G/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: 18`` CMP Passage: No Timing dates: none Substrate:
Narrative: Small G/W found during recon; flows along proposed unit 581-420 boundary.

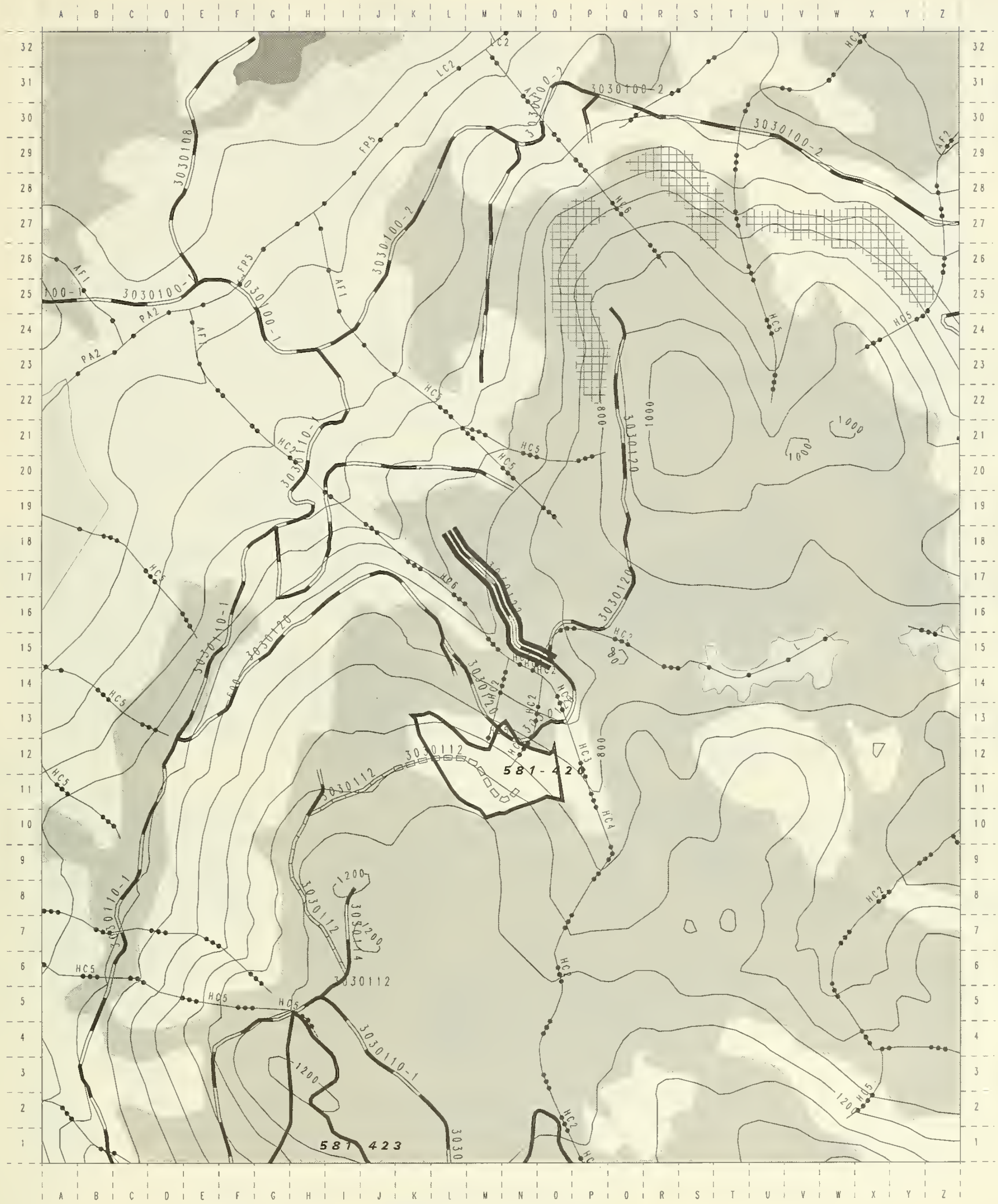
C) MP: 0.89 AHMU: Class IV, O/W Channel Type: HC2 BF width: BF depth:
Gradient %: Structure: 36`` CMP Passage: No Timing dates: none Substrate:
Narrative: Small O/W found during recon; flows from proposed unit 581-420.

D) MP: 0.99 AHMU: Class III O/W Channel Type: HC2 BF width: 17.0 ft. BF depth:
Gradient %: Structure: 72`` CMP Passage: No Timing dates: none Substrate:
Narrative: Class III, O/W found during recon with 1.9 ft. perched outlet; flows along east unit 581-420 boundary.

C) MP: 1.09 AHMU: Class IV, O/W Channel Type: HC2 BF width: 4.0 ft. BF depth:
Gradient %: Structure: 48`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon found 48" CMP, Class IV O/W.

Road #: **3030120** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 28N Photo #'s: 1090-4

Luck Loke Project Areo ROD Rood Card 3030122



02/09/00 PAGE 1

Miles and Kilometers

Road Number	Miles	Kilometer
3030122	0.31	0.50
	0.31	0.50

0 .1 0.2 Miles

Create by Erich Grebner on February 09, 2000
/luck/plots/rdcard3030122

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030122 Beginning Terminus MP 0.00 Ending Terminus MP 0.31

Existing Construction Beginning MP 0.00 Length 0.31

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 1 Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Construct a barrier ditch at beginning of road.

Travel Management Narrative:
Road stored for resource and economic concerns. Leave drainage structures in place. Construct cross drain water bars on grades.

District Ranger Approval (signature):____________________ Date:____________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
No immediate concerns. Road accesses one potential future thinning opportunity that will be assessed for needs in 15 to 20 years.

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3030000).

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Existing road is open and driveable. Road to be put in storage (BMP 14.22). Waterbar all drainage structures (BMP 14.9). Consider grass seeding road surface (BMP 14.8).

Road Location Narrative:
Existing Road

Wetlands Avoidance:
Existing road.

Stream Crossings:
One Class IV O/W stream crossing **from field review** during CPOW unit layout.

A) MP: ~0.05 AHMU: Class IV O/W Channel Type: HC2 BF width: BF depth:
Gradient %: Structure: 48`` CMP Passage: No Timing dates: none Substrate:
Narrative: Flows into Class III below road. .

Road #: **3030122** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 28N Photo #'s: 1090-4

Luck Lake Project Area ROD Road Card 3030200-1

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030200-1 Beginning Terminus MP 0.00 Ending Terminus MP 0.76

Reconstruction Beginning MP 0.00 Length 0.76

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 2
Intended Purpose and Use: Silvicultural activities and post sale access.

AFRPR Post Sale Status: Active

Travel Management Strategy:
Encourage:
Accept: High clearance vehicles.
Discourage:
Eliminate:
Prohibit:
Access Restriction Devices: None.

Travel Management Narrative:
Existing road is to remain open for post sale activities and local established recreation activities. Sign road for high clearance access. Install relief pipes. Stabilize cut slopes.

District Ranger Approval (signature):________________ Date:__________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; Shot rock surfacing, and 1 ft. ditch.

Timber/Logging Systems:
Road accesses units 581-414 and 581-435.

Silviculture:
No concerns. Road will access units 581-414 and 435 as well as existing harvest areas for current and future silvicultural treatments in young growth stands 57203-506 (5 acres), 58101-517 (79 acres), 516 (192 acres) and 518 (88 acres).

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3030000).

Cultural:
Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Existing road is open and driveable. Reconstruction is limited to ditchline cleanout and blading. Place any excavated material on stable upland sites if available (BMP 14.12, 12.5). Reseed ditchlines and remove slash from personal use timber harvest activities (BMP 14.8). Road to be left open (BMP 14.22). Rock walls may be necessary to stabilize cutbanks (BMP 14.8). Add several relief culverts to maintain hillslope hydrology (BMP 14.9 and 14.17).

Road Location Narrative:
Existing Road and new extension accesses Units 581-414 and 434. Reconstruct ditch, malfunctioning drainage structures, washed road surface and some brushing.

Wetlands Avoidance:
Existing road.

Stream Crossings:
Two Class III, one Class IV O/W, and one Class IV G/W stream crossings **based on field review and Roadcon.** The stream crossings listed below are from the beginning to end of the existing road segment.

A) MP: 0.03 AHMU: Class III Channel Type: HC5 BF width: 4.0 ft. BF depth:
Gradient %: Structure: 36`` CMP Passage: No Timing dates: 6/15 to 9/1 Substrate:
Narrative: Roadcon found 36`` CMP with a 2.0 ft. perched outlet; Class I habitat, Coho, immediately downstream.

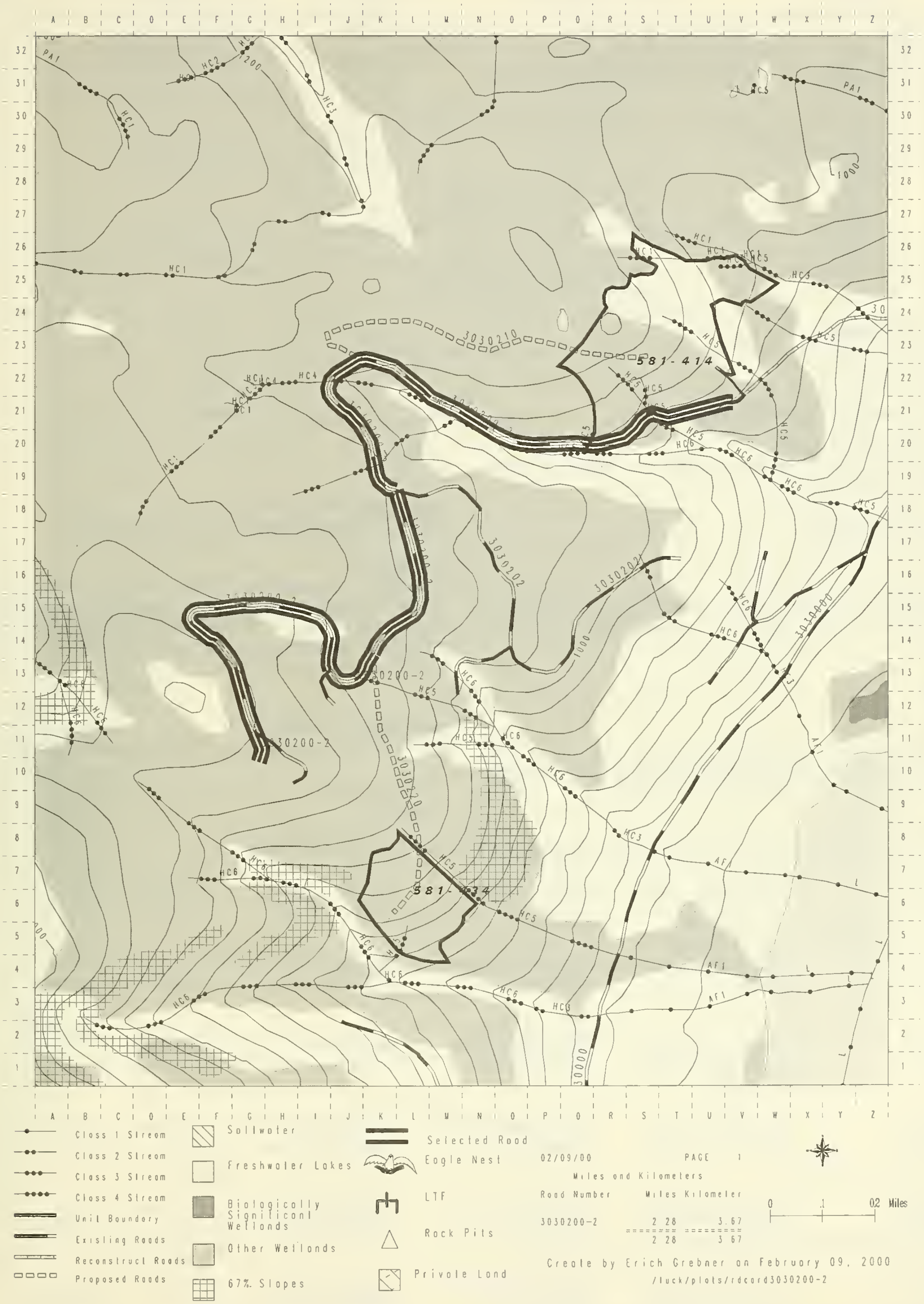
B) MP: 0.49 AHMU: Class III Channel Type: HC5 BF width: 3.5 ft. BF depth:
Gradient %: Structure: 48`` CMP Passage: No Timing dates: none Substrate:
Narrative: This is stream 414-3.

C) MP: 0.59 AHMU: Class IV O/W Channel Type: HC5 BF width: 4.5 ft. BF depth:
Gradient %: Structure: 36`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon found 36`` CMP with 4.5 ft. active channel.

D) MP: 0.67 AHMU: Class IV G/W Channel Type: HC5 BF width: 2.0 ft. BF depth:
Gradient %: Structure: 24`` CMP Passage: No Timing dates: none Substrate:
Narrative: This is stream 414-1

Road #: 3030200-1 Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 27N Photo #'s: 1090-103
Aerial Photo: Yr. 71 Line 0032 Photo #'s:472 211, 212

Luck Lake Project Area ROD Road Card 3030200-2



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030200-2 Beginning Terminus MP 0.76 Ending Terminus MP 3.04

Existing Construction Beginning MP 0.76 Length 2.28

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 2 Active Sale 2 Post Sale 2
Intended Purpose and Use: Silvicultural activities and post sale access.

AFRPR Post Sale Status: Active MP 0.00 to 2.33; Inactive MP 2.33 to 3.06

Travel Management Strategy:
Encourage:
Accept: High clearance vehicles to MP 2.33.
Discourage:
Eliminate: All vehicle access after MP 2.33. Place in storage.
Prohibit:
Access Restriction Devices: Construct barrier ditch immediately after small spur road (left) at MP 2.33. Locate barrier ditch to provide adequate turnaround area.

Travel Management Narrative:
Existing road is to remain open to MP 2.33 for post sale activities and local established recreation activities. After MP 2.33, 3030200-2 is immediately adjacent to a small OGR.

District Ranger Approval (signature):________________ Date:__________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; Shot rock surfacing, and 1 ft. ditch.

Timber/Logging Systems:
Road accesses units 581-414 and unit 581-434.

Silviculture:
Road accesses units 581-414 and unit 581-434, as well as existing harvest units for current and future silvicultural treatments. See narrative for road 3030200-1

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3030000).

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Existing road is open and driveable. Reconstruction is limited to ditchline cleanout and blading. Place any excavated material on stable upland sites if available (BMP 14.12, 12.5). Reseed ditchlines and remove slash from personal use timber harvest activities (BMP 14.8). Road to remain open for community use (BMP 14.22).

Road Location Narrative:
Existing Road and new extension accesses Units 581-414 and 434.

Wetlands Avoidance:
Existing road.

Stream Crossings:
Three Class III O/W, three Class IV O/W and five Class IV G/W crossing **based on Roadcon and field review**.

A) MP: 0.94 AHMU: Class IV, O/W Channel Type: HC5 BF width: 4.0 ft. BF depth:
Gradient %: 30 Structure: 36`` CMP Passage: No Timing dates: none Substrate:
Narrative: This stream is 414-4, Class IV, O/W.

B) MP: 1.09 AHMU: Class IV G/W Channel Type: HC5 BF width: 3.0 ft. BF depth:
Gradient %: Structure: 24`` CMP Passage: No Timing dates: none Substrate:
Narrative: This is a Class IV, G/W stream.

C) MP: 1.19 AHMU: Class IV G/W Channel Type: HC5 BF width: 3.0 ft. BF depth:
Gradient %: Structure: 24`` CMP Passage: No Timing dates: none Substrate:
Narrative: This is a Class IV, G/W stream.

D) MP: 1.41 AHMU: Class IV O/W Channel Type: HC5 BF width: 2.5 ft. BF depth:
Gradient %: Structure: 48`` CMP Passage: No Timing dates: none Substrate:
Narrative: Water quality stream.

E) MP: 1.54 AHMU: Class III Channel Type: HC5 BF width: 5.0 ft. BF depth:
Gradient %: Structure: 72`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon found Class III stream with 5.0 ft. active channel.

F) MP: 1.61 AHMU: Class III Channel Type: HC6 BF width: 8.0 ft. BF depth:
Gradient %: Structure: 72`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon found Class III stream with 8.0 ft. active channel.

G) MP: 1.82 AHMU: Class III Channel Type: HC3 BF width: 4.5 ft. BF depth:
Gradient %: Structure: 48`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon found Class III with a 4.5 ft. active channel.

Road No. 3030200-2

Stream Crossings:

H) MP: 1.87 AHMU: Class IV G/W Channel Type: HC5 BF width: 2.0 ft. BF depth:
Gradient %: Structure: 48`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon found Class IV G/W with a 2.0 ft. active channel.

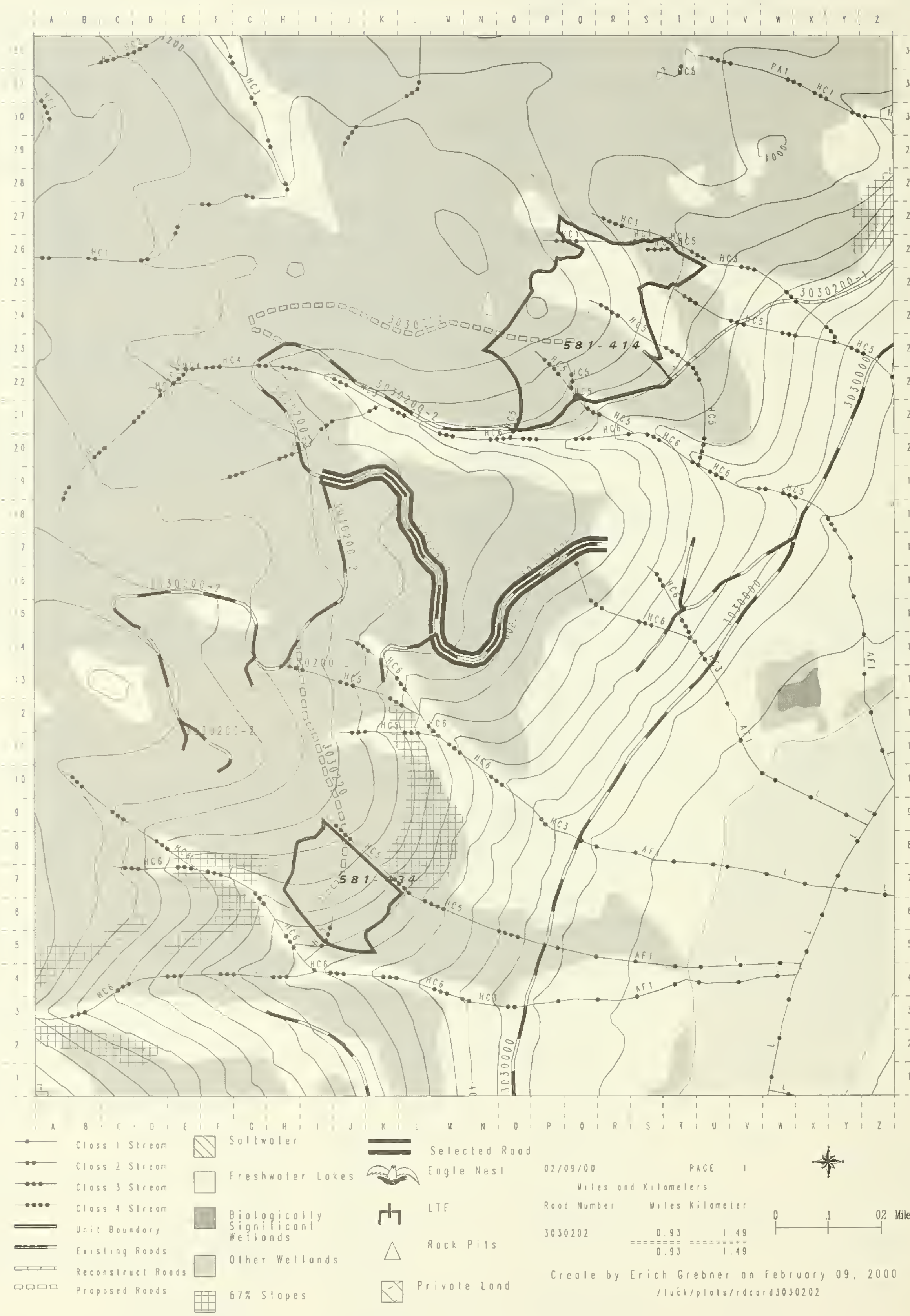
I) MP: 2.06 AHMU: Class IV G/W Channel Type: HC5 BF width: 3.0 ft. BF depth:
Gradient %: Structure: 48`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon found Class IV G/W with a 3.0 ft. active channel.

J) MP: 2.21 AHMU: Class IV O/W Channel Type: HC5 BF width: 3.5 ft. BF depth:
Gradient %: Structure: 48`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon found Class IV O/W with a 3.5 ft. active channel.

K) MP: 2.56 AHMU: Class IV G/W Channel Type: HC5 BF width: 2.0 ft. BF depth:
Gradient %: Structure: 36`` CMP Passage: No Timing dates: none Substrate:
Narrative: Flows into previous O/W stream.

Road #: **3030200-2 Map #:** Craig D-3 NE Aerial Photo: Yr. 91 Line 26N Photo #'s: 1090-214

Luck Lake Project Area ROD Road Card 3030202



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030202 | Beginning Terminus MP 0.00 | Ending Terminus MP 0.93

Existing Construction | Beginning MP 0.00 | Length 0.93

Road Management Objectives:
Funct. Class L | Traffic Service Level D | Hwy. Safety Act NO | Design Veh. LT
Critical Veh. LB | Maint. Level: 1 | Active Sale N/A | Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Construct barrier ditch at beginning of road. Waterbar steep grades sufficiently to prevent road surface erosion. Pull pipes, create water bars, and reseed slopes.

Travel Management Narrative:
Road is currently not driveable past a gully at MP 0.66. No anticipated management for the next 10 years. Thinning units can be accessed from other roads.

District Ranger Approval (signature):______________ Date:__________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
No concerns. Roads 3030200-1, -2 and 3030000 will remain open and provide sufficient access for cultural treatments in young growth stand 58101-516.

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3030000).

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Existing road is open and driveable to the midpoint. Road to be put in storage (BMP 14.22). Waterbar all drainage structures (BMP 14.9). Consider grass seeding road surface (BMP 14.8).

Road Location Narrative:
Existing Road

Wetlands Avoidance:
Existing road.

Stream Crossings:
Three Class IV O/W stream crossings **based on field review.** The crossings are listed from the beginning to end of the existing road segment.

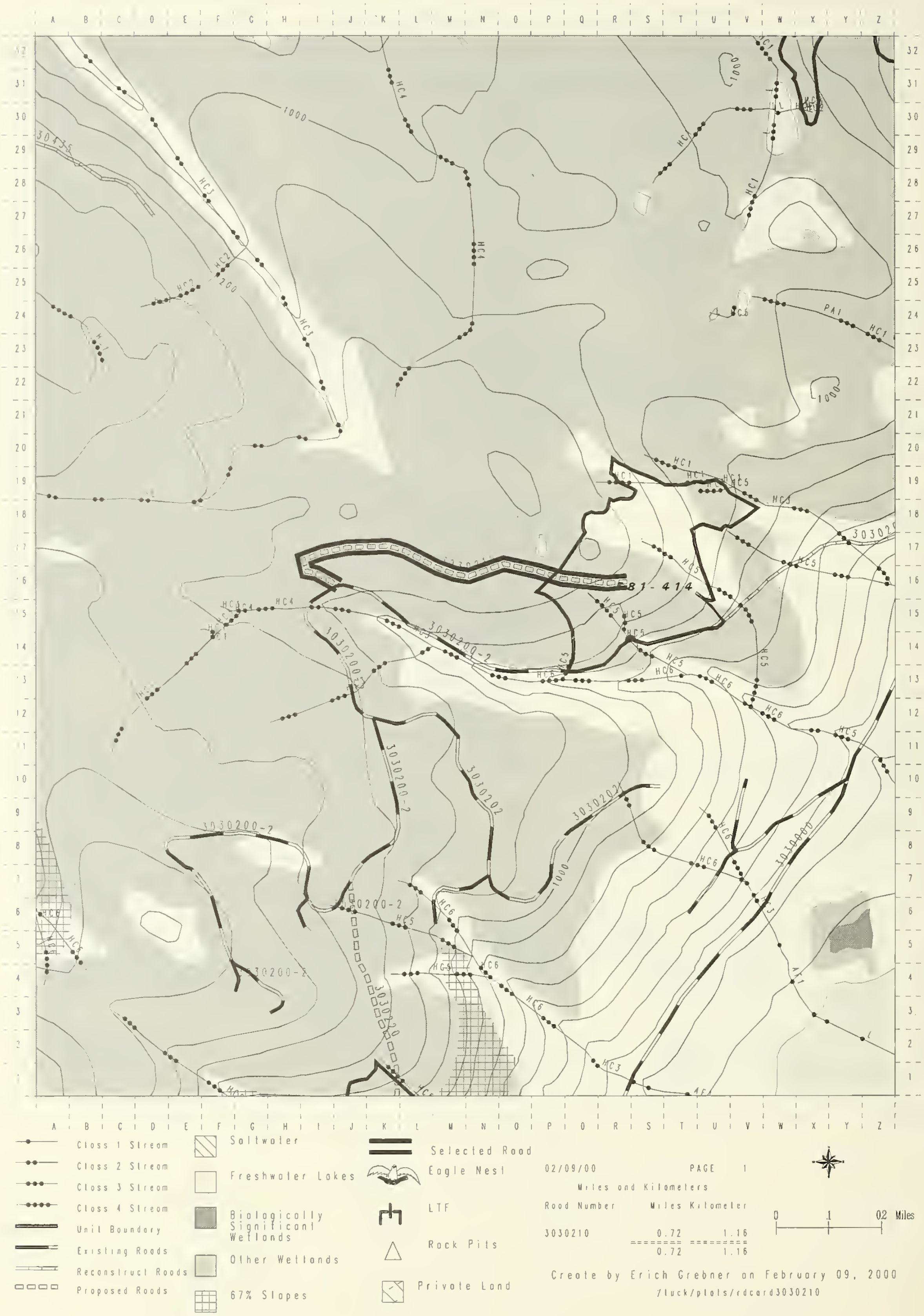
A) MP: 0.04 | AHMU: Class IV O/W | Channel Type: HC5 | BF width: 1.5 ft. | BF depth:
Gradient %: | Structure: 36`` CMP | Passage: No | Timing dates: none | Substrate:
Narrative: Water quality stream based on Roadcon.

B) MP: 0.32 | AHMU: Class IV O/W | Channel Type: HC5 | BF width: 4.0 ft. | BF depth:
Gradient %: | Structure: 48`` CMP | Passage: No | Timing dates: none | Substrate:
Narrative: Water quality stream based on Roadcon.

C) MP: 0.66 | AHMU: Class IV O/W | Channel Type: HC5 | BF width: | BF depth:
Gradient %: | Structure: barrier ditch | Passage: No | Timing dates: none | Substrate:
Narrative: Roadcon found undriveable barrier ditch at large O/W stream

Road #: **3030202** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 27N Photo #'s: 1090-213

Luck Lake Project Area ROD Road Card 3030210



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030210 Beginning Terminus MP 0.00 Ending Terminus MP 0.72

New Construction Beginning MP 0.00 Length 0.72

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Construct barrier ditch at beginning of road. Pull pipes, create water bars, and reseed slopes.

Travel Management Narrative:
Store road to reduce maintenance costs.

District Ranger Approval (signature):____________________ Date:____________

Design Narrative Information:
Design standards are as follows: Road width 14'; Design speed 10 MPH.; Max grade 20%; Surface shot rock; minimize ditches and roll grade to drain and construct minimum standard J-hole turnouts.

Timber/Logging Systems:
The 3030210 road accesses timber sale unit 581-414.

Silviculture:
No concerns. Road 3030200 will remain open and provide sufficient access for required reforestation activities in unit 581-414.

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3030000).

Cultural:
Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
The 3030210 route crosses 20 to 40 percent sideslopes to access unit 581-414. Most of the 0.72-mile route traverses cedar-hemlock-blueberry-skunk cabbage forested wetlands below a high muskeg. Soils are mostly poorly drained organics 20 inches thick over bedrock. Road cross drainage will be critical for maintaining hillslope ground water flow patterns (BMP 14. 9). Unit 414 could be helicopter logged but the costs do not outweigh the benefits. The 210 road is proposed for storage following harvest. The 210 road meets the requirements for the silvicultural road exemption from the 404 permit process. Apply 33 CFR BMP's 2, 4, 5, 7 and 8.

Road Location Narrative:
Road accesses Unit 581-414. A route from the east is longer, traverses more wetlands and steep ground. This route is on moderate terrain. Cuts and fills will be small.

Wetlands Avoidance:
The route traverses some small open bogs and fens; however, the route will be predominately in scrub-forested wetlands. The switchback avoids an open bog. Location shown within high value wetlands is all within forested wetlands.

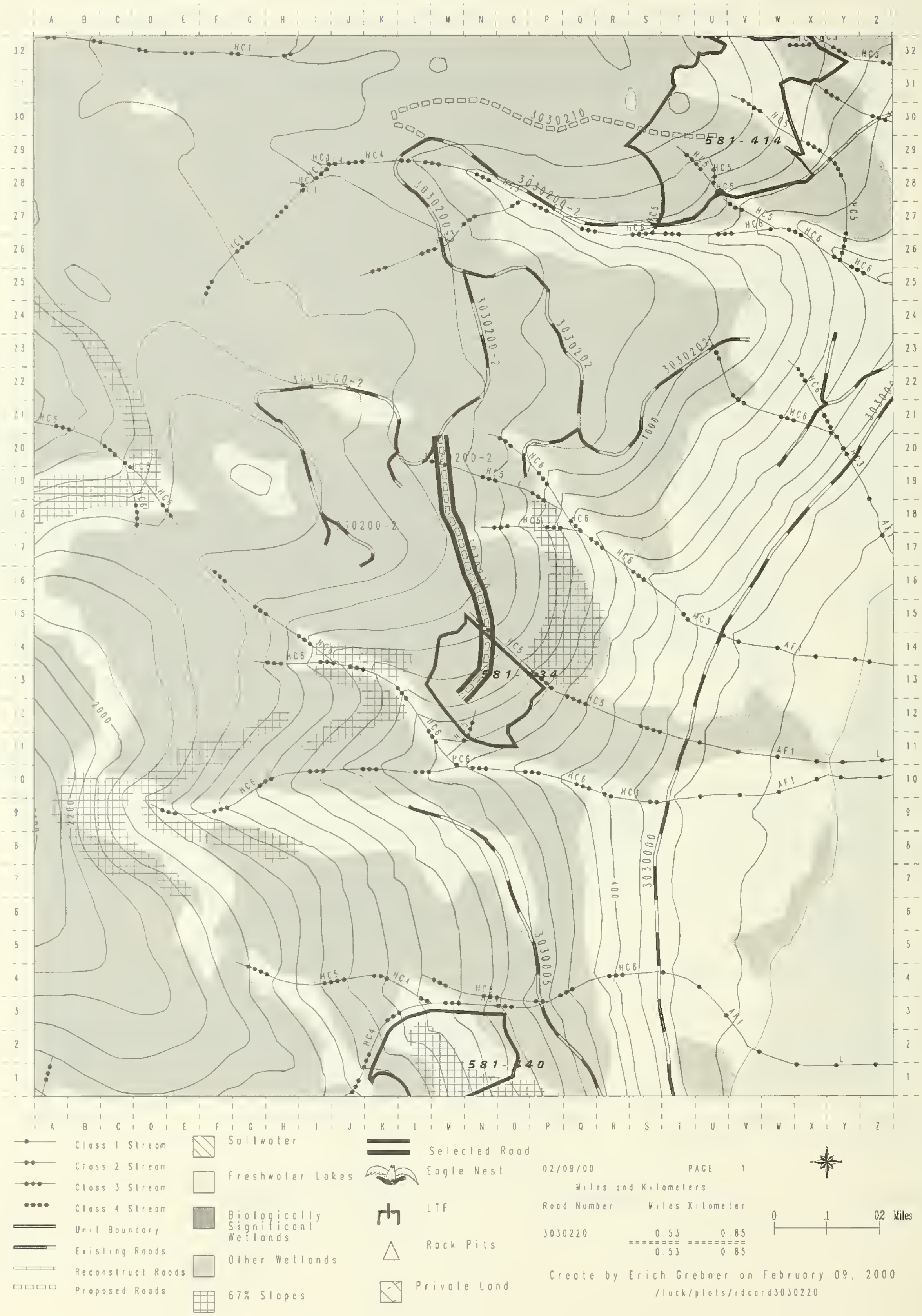
Stream Crossings:
Two Class IV G/W streams **identified by recon** for the new construction; no other fisheries concerns.

A) MP: unknown AHMU: Class IV G/W Channel Type: HC5 BF width: 3.0 ft. BF depth:
Gradient %: Structure: Passage: No Timing dates: none Substrate:
Narrative: Identified during recon as crossing A.

B) MP: unknown AHMU: Class IV G/W Channel Type: HC5 BF width: 3.0 ft. BF depth:
Gradient %: Structure: Passage: No Timing dates: none Substrate:
Narrative: Identified during recon as crossing B.

Road #: **3030210** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 27N Photo #'s: 1090-103

Luck Lake Project Area ROD Road Card 3030220



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030220 Beginning Terminus MP 0.00 Ending Terminus MP 0.53

New Construction Beginning MP 0.00 Length 0.53

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Construct barrier ditch at beginning of road. Pull pipes, create water bars, and reseed slopes.

Travel Management Narrative:
Store road to reduce maintenance costs.

District Ranger Approval (signature):______________________ Date:______________

Design Narrative Information:
Design standards are as follows: Road width 14'; Design speed 10 MPH.; Max grade 20%; Surface shot rock; minimize ditches and roll grade to drain and construct minimum standard J-hole turnouts.

Timber/Logging Systems:
The 3030220 road accesses timber sale unit 581-434.

Silviculture:
Road closure will require access by foot or helicopter for required reforestation work in unit 581-434. No other concerns.

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Luck Lake. No sidecast. Locate rockpit in area unseen from Luck Lake or mainline (3030000).

Cultural:
Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
The proposed 220 route crosses nearly level terrain to access unit 434. The route is relatively easy construction and will mostly consist of rock overlay (BMP 14.8 and 14.9). The wet-hab map indicates mostly forested wetlands on the site. The route crosses cedar-hemlock-blueberry-skunk cabbage forested wetland and upland soils. No alternative route exists, as the entire hillside is a complex of forested wetland and upland soils. Unit 434 could be helicopter yarded, however the benefits do not outweigh the costs given the relatively easy road opportunity. Apply 33 CFR BMP's 5, 7, & 8. The 220 road is proposed for storage after harvest (BMP 14.22). No high-risk structures exist along the route. The 220 road as proposed meets the requirements for the silvicultural road exemption from the 404 permit process.

Road Location Narrative:
Road accesses Unit 581-434. This route is on moderate terrain. Cuts and fills will be small and location provides the least road density.

Wetlands Avoidance:
The route traverses some small open bogs and fens, however, the route will be predominately in forested wetlands.

Stream Crossings:
One Class IV O/W, and three Class IV G/W streams **located during new road recon**. No other fisheries concerns.

A) MP: unknown AHMU: Class IV G/W Channel Type: HC5 BF width: 2.0 ft. BF depth:
Gradient %: Structure: Passage: No Timing dates: none Substrate: gravel
Narrative: Found by road recon.

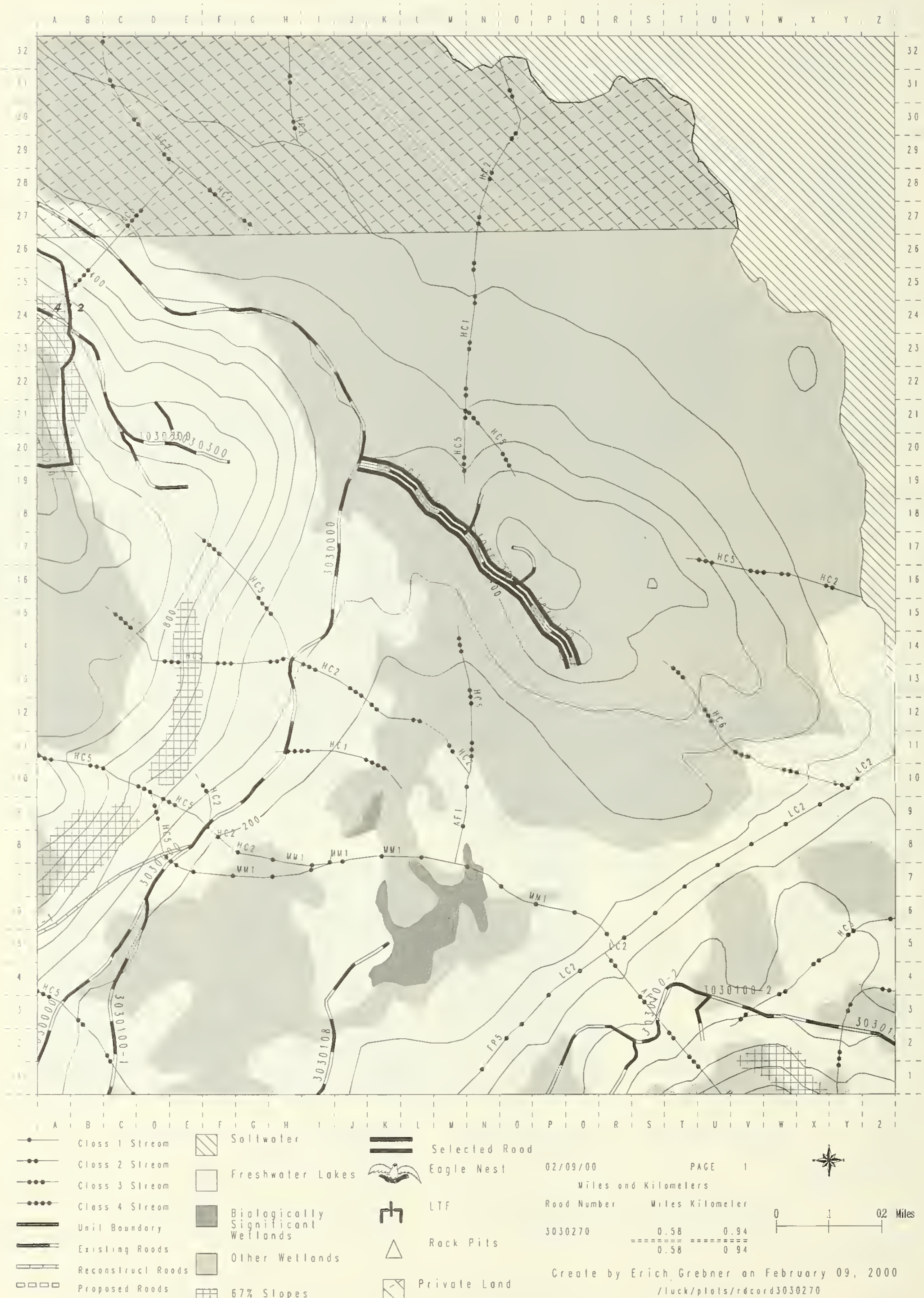
B) MP: unknown AHMU: Class IV O/W Channel Type: HC5 BF width: 3.0 ft. BF depth:
Gradient %: Structure: Passage: No Timing dates: none Substrate: gravel
Narrative: Found by road recon.

C) MP: unknown AHMU: Class IV G/W Channel Type: HC5 BF width: 2.0 ft. BF depth:
Gradient %: Structure: Passage: No Timing dates: none Substrate: gravel
Narrative: Found by road recon.

D) MP: unknown AHMU: Class IV G/W Channel Type: HC5 BF width: 2.0 ft. BF depth:
Gradient %: Structure: Passage: No Timing dates: none Substrate: gravel
Narrative: Found by road recon.

Road #: **3030220** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 27N Photo #'s: 1090-103

Luck Lake Project Area ROD Road Card 3030270



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030270 Beginning Terminus MP 0.00 Ending Terminus MP 0.58

Existing Construction Beginning MP 0.00 Length 0.58

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Decommission road.
Prohibit:
Access Restriction Devices: Remove 36-inch pipe at MP 0.04 and construct barrier ditch. Pull pipes, create water bars, and reseed slopes. Reshape road.

Travel Management Narrative:
Road is currently not driveable past MP 0.2. Entire road is located within an amended small OGR.

District Ranger Approval (signature):________________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
No immediate concerns. Road accesses one young growth stand, 58101-526 (39 acres) that will be assessed for thinning needs in 2005. Drivable access is within 1/2 mile from mainline road 3030.

Wildlife:
Road is located in proposed OGR.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
The existing road is closed with a barrier ditch. There are no known erosion concerns with this road. Forested and non-forested wetlands are present. Road is planned for decommissioning (BMP 14.22 & 14.24). Remove all drainage structures (BMP 14.9).

Road Location Narrative:
Existing Road

Wetlands Avoidance:
Existing road.

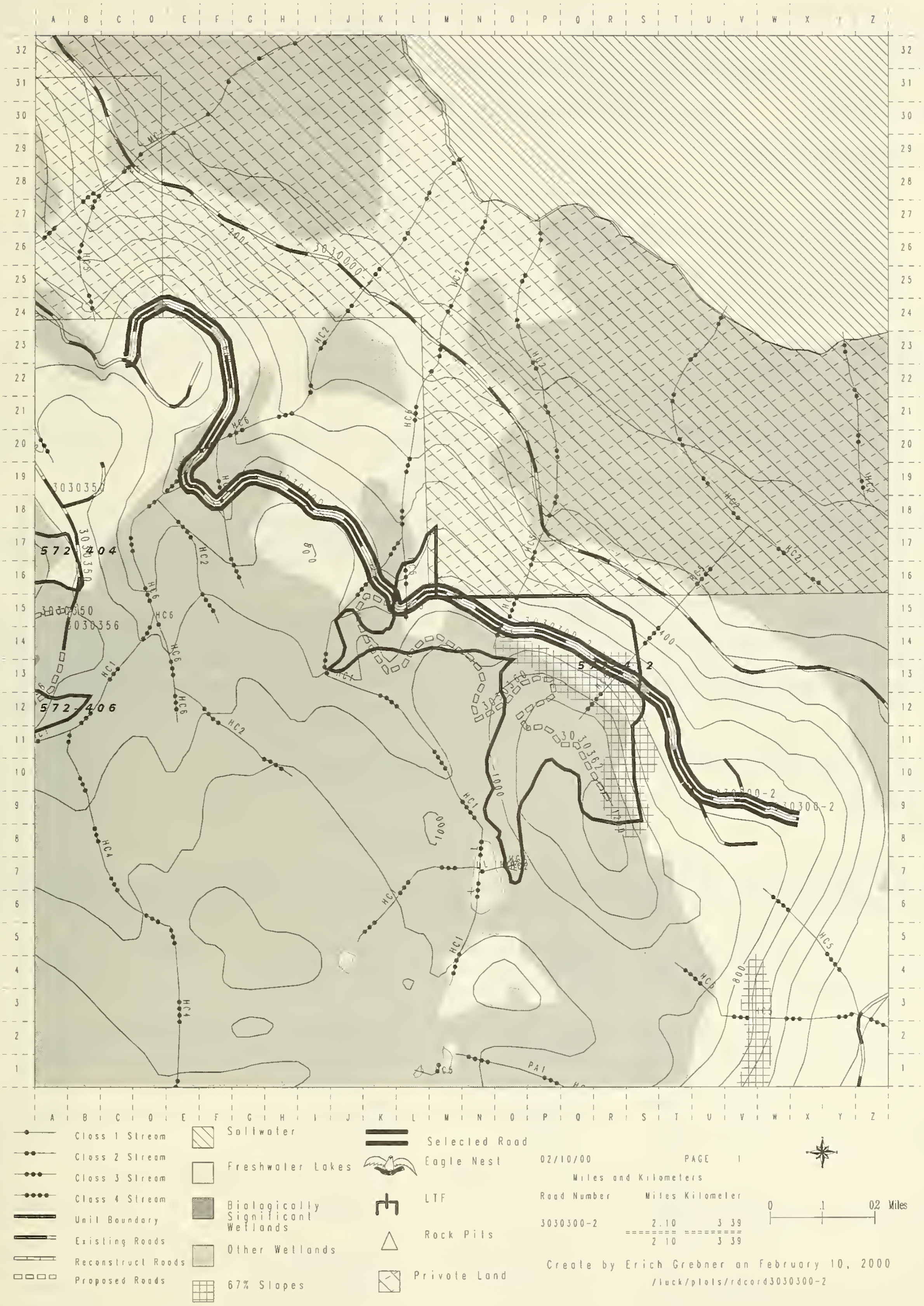
Stream Crossings:
One Class IV G/W was **located by Roadcon**. No other fisheries concerns.

A) MP: 0.04 AHMU: Class IV G/W Channel Type: PA1 BF width: 1.5 ft. BF depth:
Gradient %: Structure: 36`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon located this small crossing.

Road #: **3030270** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 28N Photo #'s: 1090-3

Luck Lake Project Area ROD Road Card 3030300-1

Luck Lake Project Area ROD Road Card 3030300-2



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030300-1 Beginning Terminus MP 0.00 Ending Terminus MP 2.13
Road No. 3030300-2 Beginning Terminus MP 2.13 Ending Terminus MP 4.23

Existing Construction Beginning MP 0.00 Length 4.23

Road Management Objectives:
Funct. Class L Traffic Service Level C Hwy. Safety Act No Design Veh. LT
Critical Veh. LB Maint. Level: 2; N/A Active Sale 2 Post Sale 2; N/A
Intended Purpose and Use: Silvicultural activities, commercial, recreation and community access.

AFRPR Post Sale Status: Active from MP 0.00 to 4.07; Closed from MP 4.07 to 4.27

Travel Management Strategy:
Encourage:
Accept: High clearance vehicles from MP 0.00 to approximately MP 4.07.
Discourage:
Eliminate: All vehicle access at proposed OGR boundary, approximately MP 4.07. Decommission road from MP 4.07 to MP 4.23.
Prohibit:
Access Restriction Devices: Construct barrier ditch at or before MP 4.07. Locate the barrier ditch beyond an area suitable for use as a turnaround.

Travel Management Narrative:
Road use consists of local community traffic, state timber sales, and access to personal use timber. Eliminate road access into amended OGR to mitigate wildlife concerns. Evaluate entire road for integrity of drainage structures.

District Ranger Approval (signature):____________________ Date:____________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH. with turnouts.

Timber/Logging Systems:
Clean ditches. Drainage and road surface repair.

Silviculture:
No immediate concerns. Road accesses potential precommercial thinning needs in stands 57202-504 (16 acres), 517 (67 acres), 57202-2525, 58101-525 and identified needs in stand 57102-505 (63 acres), 57202-507 (17 acres) and 58101-502 (17 acres) via state lands. Proposed closure will still allow reasonable foot access to treat young growth within OGR for wildlife benefits.

Wildlife:
MP 4.07 to end of road is within amended OGR.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
MP 0.0 to 1.5 lies within state land selection at Coffman Cove. The local community uses rock resources adjacent to this road.

Soils/Water:
The road is currently open and driveable. Reconstruction should establish drainage at HC6 stream downslope of unit 404 (BMP 14.8). Use BMP 14.12 to control excavation of sidecast material. Apply BMP 12.5 to avoid sidecast in wetlands. Road is planned to remain open to MP 4.07. Armor culvert inlet at HC6 stream crossing to prevent sloughing and plugging of pipe (BMP's 14.9 and 14.20)

Road Location Narrative:
Existing Road.

Wetlands Avoidance:
Existing road.

Stream Crossings:
There is one Class II B/W, three Class III O/W, two Class IV O/W and three Class IV G/W stream crossings listed below are **based on Roadcon, and timber recon**. The stream crossings are listed from the beginning of the road to the end.

A) MP: 0.78 AHMU: Class II B/W Channel Type: MM1 BF width: 3.0 ft. BF depth:
Gradient %: Structure: 36`` CMP Passage: Yes Timing dates: None Substrate:
Narrative: Resident fish stream located by Roadcon; Dolly Varden observed.

B) MP: 1.78 AHMU: Class IV G/W Channel Type: PA1 BF width: 2.0 ft. BF depth:
Gradient %: Structure: 24`` CMP Passage: No Timing dates: None Substrate:
Narrative: Roadcon located this small water quality stream.

C) MP: 2.75 AHMU: Class III O/W Channel Type: HC4 BF width: 13.0 ft. BF depth:
Gradient %: Structure: 72`` CMP Passage: No Timing dates: None Substrate:
Narrative: Water quality stream located by Roadcon.

D) MP: 2.82 AHMU: Class III O/W Channel Type: HC2 BF width: 4.0 ft. BF depth:
Gradient %: 15 Structure: 48`` CMP Passage: No Timing dates: None Substrate:
Narrative: Water quality stream located by Roadcon.

E) MP: 3.25 AHMU: Class III O/W Channel Type: HC6 BF width: 8.0 ft. BF depth:
Gradient %: Structure: 60`` CMP Passage: No Timing dates: None Substrate:
Narrative: Water quality stream located by Roadcon.

F) MP: 3.32 AHMU: Class IV G/W Channel Type: HC5 BF width: 2.0 ft. BF depth:
Gradient %: Structure: 18`` CMP Passage: No Timing dates: None Substrate:
Narrative: Water quality stream; is stream 412-2.

Road No. 3030300-1
Road No. 3030300-2

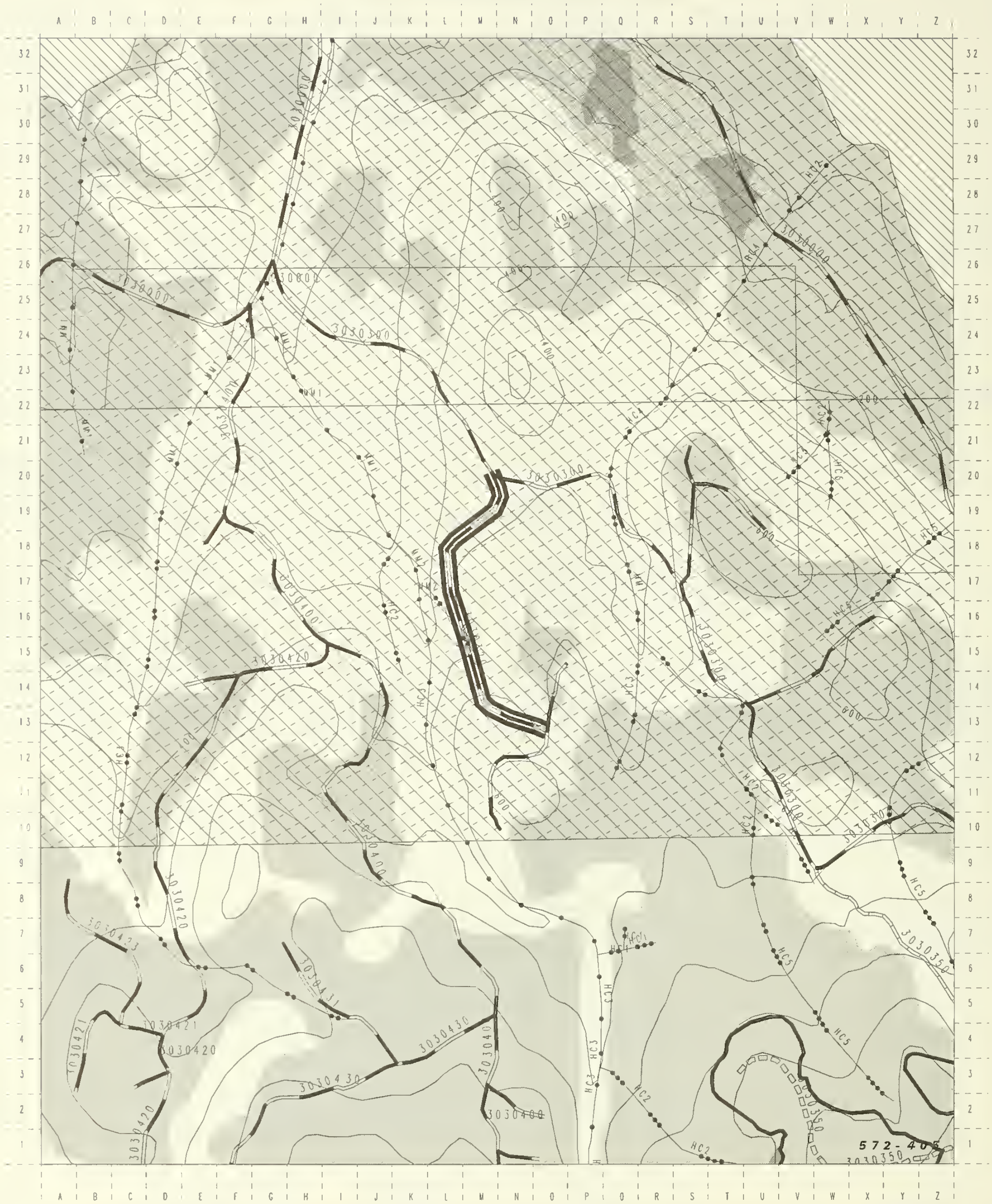
Stream Crossings:
G) MP: 3.53 AHMU: Class IV G/W Channel Type: HC5 BF width: 2.0 ft. BF depth:
Gradient %: Structure: 18`` CMP Passage: No Timing dates: None Substrate:
Narrative: Water quality stream; is stream 412-3, located by Timber Recon.

H) MP: 3.69 AHMU: Class IV O/W Channel Type: HC5 BF width: 3.0 ft. BF depth:
Gradient %: Structure: 18`` CMP Passage: No Timing dates: None Substrate:
Narrative: Water quality stream; is stream 412-4, located by Timber Recon and 100% blocked according to Roadcon.

I) MP: 4.26 AHMU: Class IV O/W Channel Type: HC5 BF width: BF depth:
Gradient %: Structure: barrier ditch Passage: No Timing dates: None Substrate:
Narrative: Roadcon located this Class III stream; needs 60`` CMP.

Road #: **3030300** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 27N Photo #'s: 1090-101
Aerial Photo: Yr. 91 Line 26N Photo #'s: 1090-216

Luck Lake Project Area ROD Road Card 3030320



Class 1 Stream	Saltwater	Selected Road	02/09/00	PAGE 1	
Class 2 Stream	Freshwater Lakes	Eagle Nest	Miles and Kilometers		
Class 3 Stream	Biologically Significant Wetlands	LTF	Road Number	Miles Kilometer	
Class 4 Stream	Other Wetlands	Rock Pits	3030320	0.59 / 0.59	0.95 / 0.95
Unit Boundary	67% Slopes	Private Land			
Existing Roads					
Reconstruct Roads					
Proposed Roads					

0 .1 .02 Miles

Create by Erich Grebner on February 09, 2000
/luck/plots/rdcard3030320

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030320 Beginning Terminus MP 0.00 Ending Terminus MP 0.59

Existing Construction Beginning MP 0.00 Length 0.59

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: See Travel Management Narrative below.
Prohibit:
Access Restriction Devices:

Travel Management Narrative:
3030320 is within lands conveyed to the State of Alaska. USFS retained an easement on this road. No joint maintenance agreements have been made with the State of Alaska or Coffman Cove community. CPOW road card indicates closure of this road, however the State may have interest in all access decisions on this road. This road is currently revegetated. It lies within the watershed that serves as the non-municipal water supply for Coffman Cove.

District Ranger Approval (signature):________________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%; and 1 ft. ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
No concerns.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Existing road is alder covered and not driveable. Encourage continued inactive status when discussing management options with the State of Alaska (BMP 14.22). The road lies adjacent to Chum Creek, which is the water source for the community of Coffman Cove.

Road Location Narrative:
Existing Road.

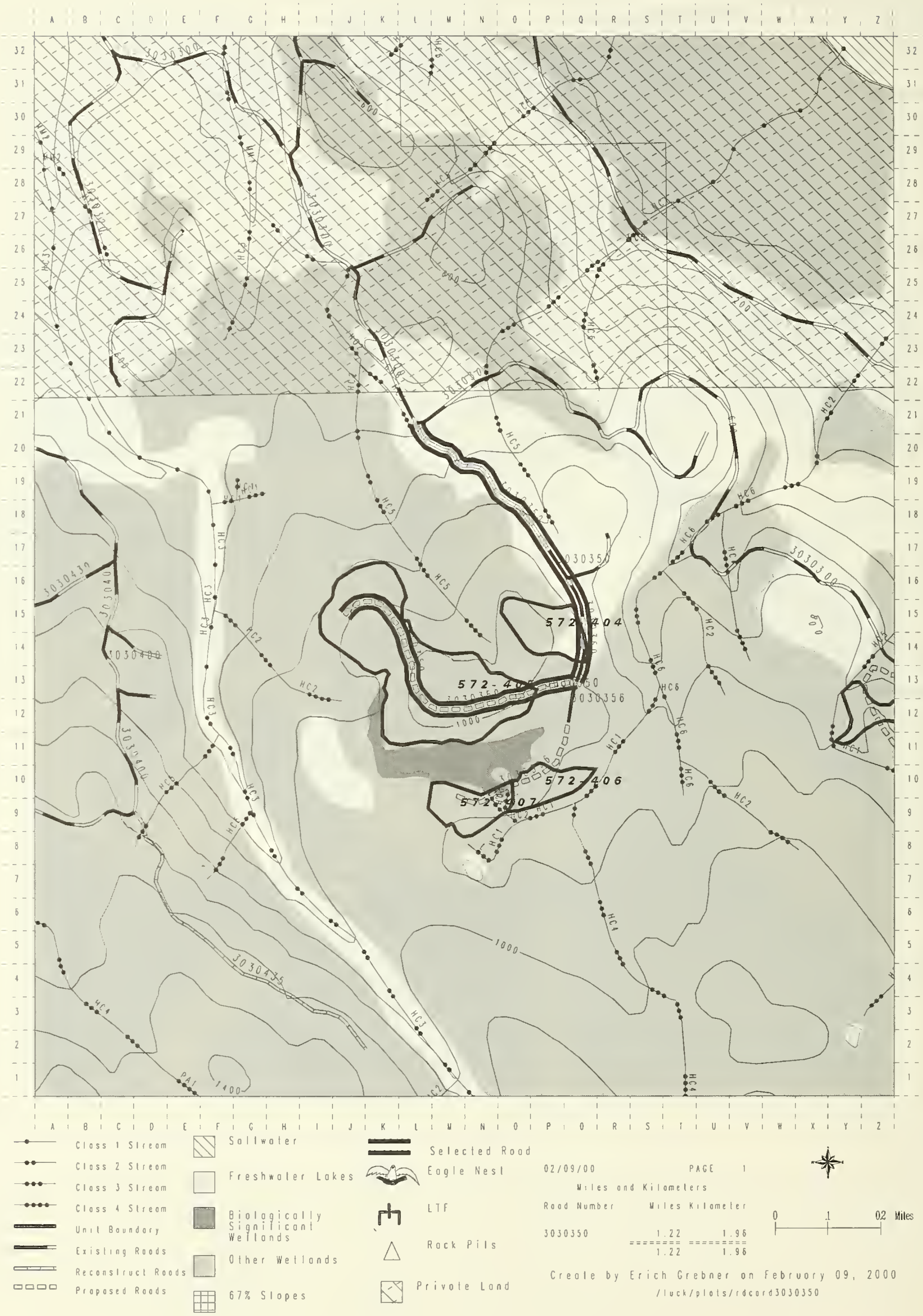
Wetlands Avoidance:
Existing road.

Stream Crossings:
One Class II stream crossing **based on Roadcon**.

A) MP: 0.20 AHMU: Class IV, O/W Channel Type: HC2 BF width: BF depth:
Gradient %: Structure: barrier ditch Passage: No Timing dates: 6/15 to 9/1 Substrate:
Narrative: This is a tributary to Chum Creek and Roadcon found barrier ditch in need of 48`` CMP.

Road #: **3030320** Map #: Craig D-3 NE Aerial Photo: Yr. 71 Line 0031 Photo #'s: 472 221

Luck Lake Project Area ROD Road Card 3030350



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030350 Beginning Terminus MP 0.00 Ending Terminus MP 1.22

Reconstruction	Beginning MP	0.00	Length	0.35
Existing Construction	Beginning MP	0.35	Length	0.29
New Construction	Beginning MP	0.64	Length	0.58

Road Management Objectives:

Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT

Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1

Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:

Encourage:

Accept:

Discourage:

Eliminate: All vehicle access. Place in storage.

Prohibit:

Access Restriction Devices: Construct barrier ditch at beginning of road. Pull pipes, create water bars, and reseed slopes. Locate barrier ditch in such a manor to provide an adequate turnaround.

Travel Management Narrative:
Store road to mitigate wildlife concerns and reduce maintenance costs.

District Ranger Approval (signature):______________________ Date:______________

Design Narrative Information:
Design standards are as follows: Road width 14'; Design speed 10 MPH.; Max grade 20%; Surface shot rock; minimize ditches and roll grade to drain and construct minimum standard J-hole turnouts.

Timber/Logging Systems:
The 3030350 road accesses timber sale unit 572-404.

Silviculture:
The 3030350 road accesses timber sale unit 572-404 and provides access to 572-403, 406, 407, 408. Road closure will also limit access proximity to 572-417. Access to these units will be by foot or helicopter for required reforestation work. Future precommercial thinning treatments in stand 57201-517 can be accessed via road 3030300.

Wildlife:
Site-specific wildlife habitat concerns.

Visual/Recreation:
Minimize cuts and fills visible to Coffman Cove and Clarence Strait. No sidecast. Locate rockpit in area unseen from Coffman Cove or Clarence Strait.

Cultural:
Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Reconstruction on the 3030350 road is expected to be slight. Use BMP 14.12 to control placement of sidecast material. New construction is proposed through forested wetlands. The road is located on the top of a small ridge. The entire unit consists of cedar-hemlock-blueberry-skunk cabbage forested wetland, so the wetland is unavoidable. No upland site exists for end-hauled material that will have fewer impacts to water quality than placement of sidecast away from streams. The wetlands donate water to downslope resources. A tall sedge fen lies immediately south of the harvest unit but is not impacted by the road. Helicopter yarding was considered, but not economical given the easy road construction opportunity (BMP 14.2 and 14.1). Some cut and fill will be required but slopes are less than 40 percent (BMP 12.5) . Apply 33 CFR BMP's 1, 4, 5, 8, and 14. The 350 road meets the requirements for the silvicultural road exemption from the 404 permit process. The 3030350 road is planned for storage following harvest (BMP 14.22). Place waterbars where needed to maintain hillslope hydrology (BMP 14.9). Grass seed road surface (BMP 14.8). Protect local water supplies by implementing oil pollution prevention and hazardous substance spill prevention measures BMP's 12.8 and 12.9).

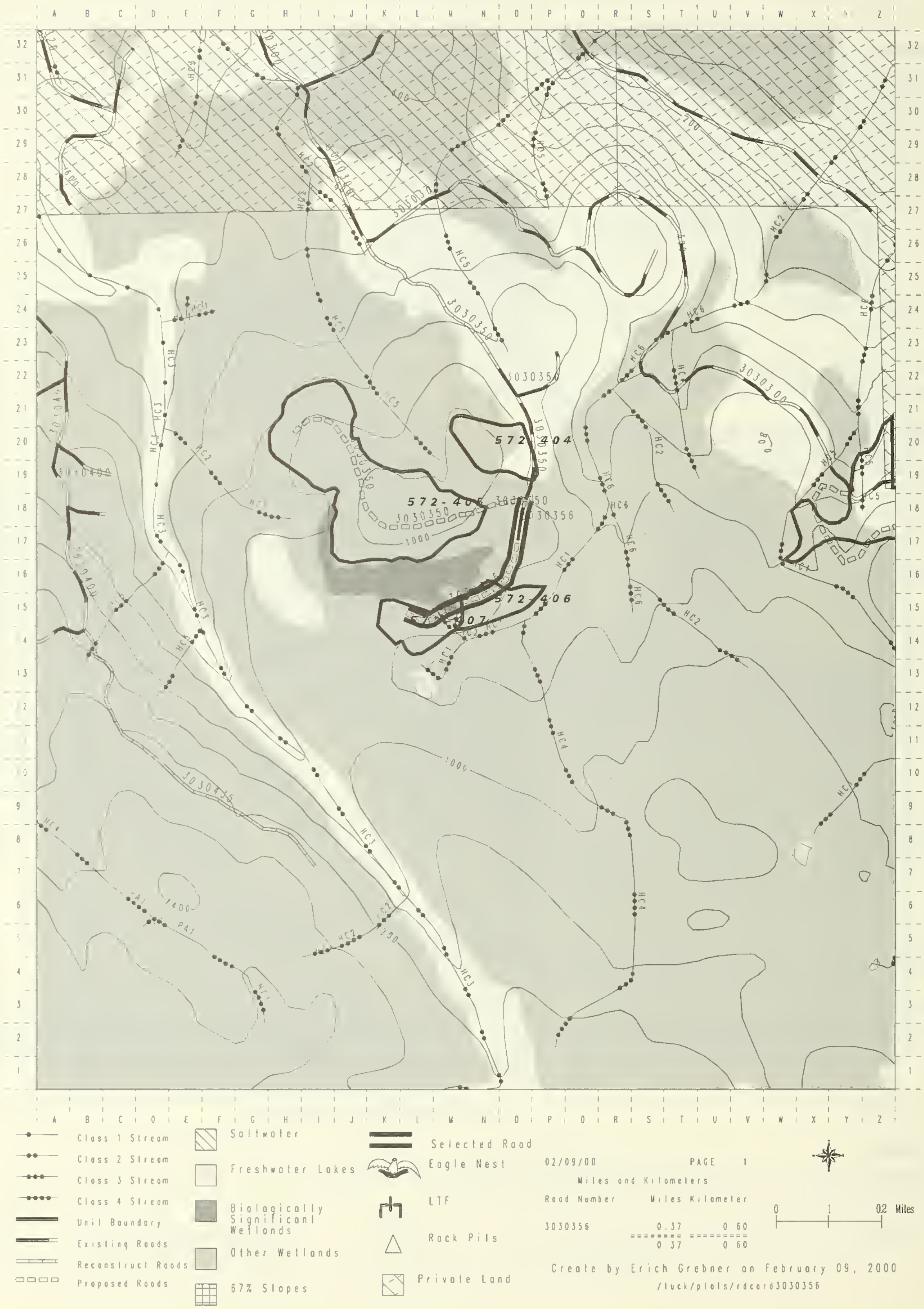
Road Location Narrative:
Existing Road and new extension accesses Units 572-403, 404, 405, 406 and 407.

Wetlands Avoidance:
The new extension avoids wetlands by running through timbered areas as much as possible. When crossing open bogs, the route is located to minimize cut sections and drainage interruption as much as possible. Moving the route southerly would create more difficult stream crossings in deep notches and require larger cuts within open bogs as side slopes are steeper than the proposed route.

Stream Crossings:
No known stream crossings on this road **based on Roadcon and GIS**. No known fisheries concerns.

Road #: **3030350** Map #: Craig D-3 NE	Aerial Photo: Yr. 91	Line 27N	Photo #'s: 1090-101 & 102
	Aerial Photo: Yr. 91	Line 26N	Photo #'s: 1090-214, & 215

Luck Lake Project Area ROD Road Card 3030356



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030356 Beginning Terminus MP 0.00 Ending Terminus MP 0.37

New Construction Beginning MP 0.00 Length 0.37

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Construct barrier ditch at beginning of road. Pull pipes, create water bars, and reseed slopes.

Travel Management Narrative:
Store road to mitigate wildlife concerns and reduce maintenance costs.

District Ranger Approval (signature):________________________ Date:____________

Design Narrative Information:
Design standards are as follows: Road width 14'; Design speed 10 MPH.; Max grade 20%; Surface shot rock; minimize ditches and roll grade to drain and construct minimum standard J-hole turnouts.

Timber/Logging Systems:
The 3030356 road accesses timber sale units 572-406 and 407.

Silviculture:
Road will be effectively closed with closure of 3030350. Access to units 572-406 and 407 will be by foot or helicopter for required reforestation work. No other vegetative treatment opportunities exist along this access corridor.

Wildlife:
Site-specific wildlife habitat concerns.

Visual/Recreation:
Minimize cuts and fills visible to Coffman Cove and Clarence Strait. No sidecast. Locate rockpit in area unseen from Coffman Cove or Clarence Strait.

Cultural:
Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
The mapped road route traverses sideslopes less than 30 percent gradient in hemlock-spruce-skunk cabbage forested wetlands and uplands. The mapped route also crosses a tall sedge fen with high resource values. A route flagged in 1999 indicates that units 572-406 and 407 can be accessed while avoiding the tall sedge fen. (BMP 14.1 and 33 CFR BMP 1). The route crosses forested wetlands with more small stream crossings than a location in the tall sedge fen wetland, however benefits outweigh costs. The forested wetlands donate water to the water quality stream south of the units. Through the forested wetlands apply 33 CFR BMP's 4, 5, 6, 7, 8, and 14. The proposed route will be put in storage following timber harvest. The proposed 356 road meets the requirements for the silvicultural road exemption from the 404 permit process.

Road Location Narrative:
Road accesses Units 572-406 and 407. Route is the most direct route minimizing road density, wetland impacts and maintenance.

Wetlands Avoidance:
The route avoids open wetlands by running through timbered areas; however, most of the route is within timbered wetlands. Flagged route avoids the large Fen north of the harvest units.

Stream Crossings:
Two Class IV G/W stream crossings located during recon for the new construction. No other fisheries concerns.

A) MP: unknown AHMU: Class IV G/W Channel Type: HC1 BF width: 2.0 ft. BF depth:
Gradient %: Structure: Passage: No Timing dates: None Substrate:
Narrative: Water quality stream; is stream 407-3.

B) MP: unknown AHMU: Class IV G/W Channel Type: HC1 BF width: 2.0 ft. BF depth:
Gradient %: Structure: Passage: No Timing dates: None Substrate:
Narrative: Water quality stream; is stream 407-2.

Road #: **3030356** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 26N Photo #'s: 1090-215 & 216

Luck Lake Project Area ROD Road Card 3030360

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030360 Beginning Terminus MP 0.00 Ending Terminus MP 0.85

New Construction Beginning MP 0.00 Length 0.85

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Construct barrier ditch at beginning of road. Pull pipes, create water bars, and reseed slopes.

Travel Management Narrative:
Store road to mitigate wildlife concerns and reduce maintenance costs.

District Ranger Approval (signature):________________________ Date:______________

Design Narrative Information:
Design standards are as follows: Road width 14'; Design speed 10 MPH.; Max grade 20%; Surface shot rock; minimize ditches and roll grade to drain and construct minimum standard J-hole turnouts.

Timber/Logging Systems:
The 3030360 road accesses timber sale unit 572-412.

Silviculture:
No concerns as planned. Access to unit 572-412 boundary is maintained.

Wildlife:
Site-specific wildlife habitat concerns.

Visual/Recreation:
Minimize cuts and fills visible to Clarence Strait. No sidecast. Locate rockpit in area unseen from Clarence Strait.

Cultural:
Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
The proposed 3030360 road includes two short steep pitches (less than 67%) of moderate difficulty construction with the remainder relatively easy construction on sideslopes less than 30 percent gradient. Control of excavated material is critical (BMP 14.12 and 14.19) when working next to the water quality stream near the point of beginning and in the poor sedge fen. The short steep pitch after the switchback contours on slopes over 40 percent gradient. Full bench construction may be necessary (BMP 14.8). The 3030360 route crosses a cedar-hemlock-blueberry-skunk cabbage forested wetland on sloping ground and a poor sedge fen on slopes less than 10 percent gradient. The poor sedge fen is located on a low rise between two water quality streams and transfers water to the water quality streams downslope. The forested wetland donates water downslope to a small pond and poor sedge fen. There is an existing road through unit 572-412, however the road does not allow uphill yarding necessary to meet soil protection requirements and reserve tree requirements. Helicopter yarding was considered but is not economical considering the relatively easy road construction. Apply 33 CFR BMP's 2, 4, 5, 6, 8, and 14. The 3030360 road is proposed for storage following timber harvest. The 3030360 road meets the requirements for the silvicultural road exemption from the 404 permit process.

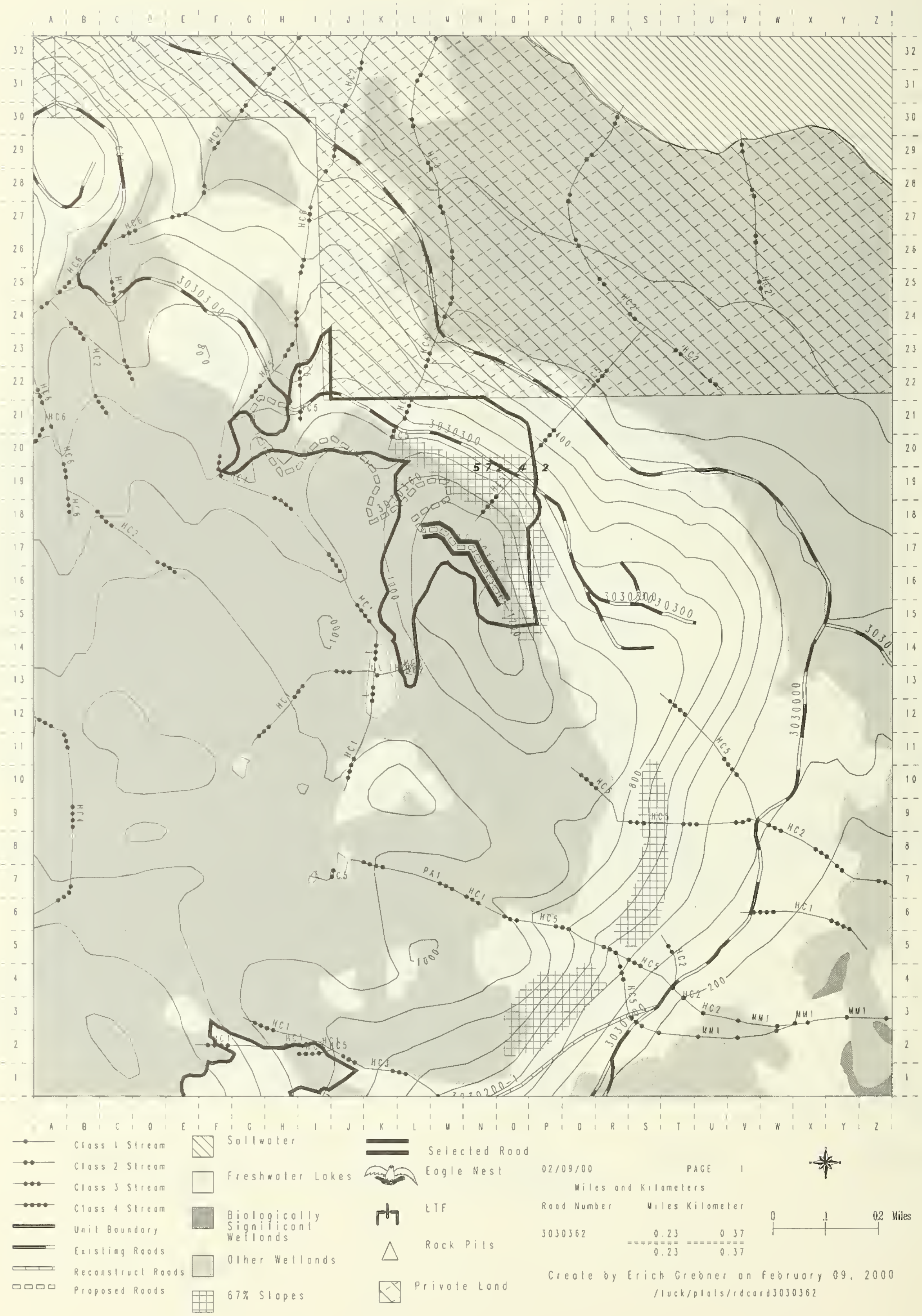
Road Location Narrative:
Proposed road accesses Unit 572-412. A route from the end of 3030300 was considered. That route would traverse more wetlands, require 0.75-mile additional road to reach the same harvest area.

Wetlands Avoidance:
The route crosses two fens to reach the harvest area. The road is located within timbered areas as much as possible. When crossing open bogs and fens, the route is located to minimize cut sections and drainage interruption as much as possible. The footprint of the road within these wetlands will be minimal as the terrain is flat.

Stream Crossings:
No known stream crossings exist for the new construction **based on unit recon.**

Road #: **3030360** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 27N Photo #'s: 1090-101
Aerial Photo: Yr. 71 Line 0032 Photo #'s: 472 212

Luck Lake Project Area ROD Road Card 3030362



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030362 Beginning Terminus MP 0.00 Ending Terminus MP 0.23

New Construction Beginning MP 0.00 Length 0.23

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Tributary to 3030360, which is stored with a barrier ditch. Pull pipes, create water bars, and reseed slopes.

Travel Management Narrative:
Store road to mitigate wildlife concerns and reduce maintenance costs.

District Ranger Approval (signature):________________________________ Date:____________________

Design Narrative Information:
Design standards are as follows: Road width 14'; Design speed 10 MPH.; Max grade 20%; Surface shot rock; minimize ditches and roll grade to drain and construct minimum standard J-hole turnouts.

Timber/Logging Systems:
The 3030362 road provides access to timber sale unit 572-412.

Silviculture:
No concerns. Road will be effectively closed with closure of road 3030360.

Wildlife:
Site-specific wildlife habitat concerns.

Visual/Recreation:
Minimize cuts and fills visible to Clarence Strait. No sidecast. Locate rockpit in area unseen from Clarence Strait.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

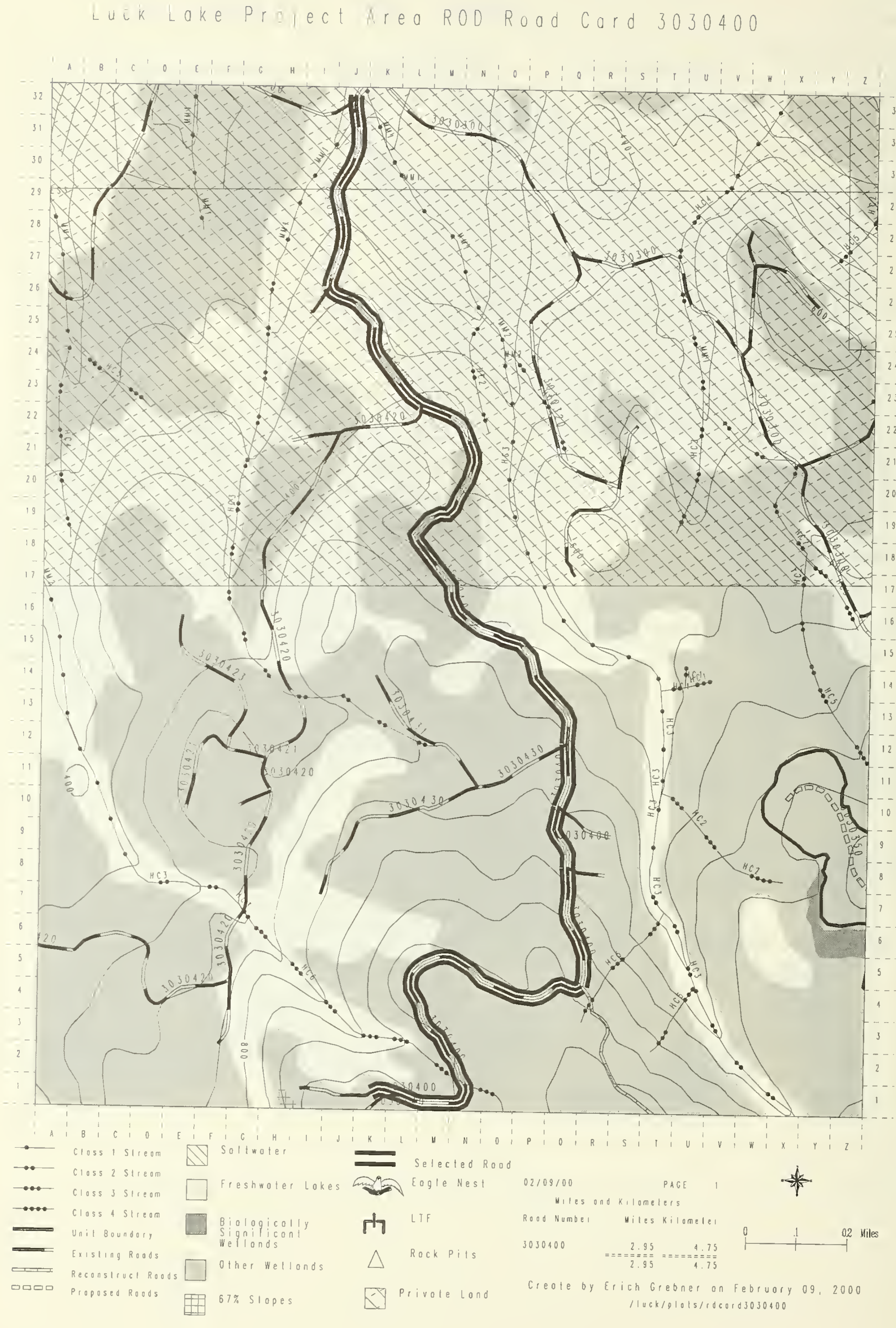
Soils/Water:
The proposed 3030362 road consists of 0.23 miles of construction on sideslopes less than 20 percent gradient. Very little cut and fill is anticipated. The site is mapped as forested wetland but is mostly upland. BMP's 14.12, 14.22 and 14.19 apply. The 3030362 road is proposed for storage following harvest. The 3030362 road is exempt from the 404 permit process as it is located on uplands.

Road Location Narrative:
Proposed road accesses Unit 572-412.

Wetlands Avoidance:
The road is located within harvest area.

Stream Crossings:
No known stream crossings exist for the new construction **based on unit recon.**

Road #: **3030362** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 27N Photo #'s: 1090-103
Aerial Photo: Yr. 71 Line 0032 Photo #'s: 472 212


Luck Lake Project Area ROD Road Card 3030400
Class 1 Stream
Class 2 Stream
Class 3 Stream
Class 4 Stream
Unit Boundary
Existing Roads
Reconstruct Roads
Proposed Roads
Saltwater
Freshwater Lakes
Biologically Significant Wetlands
Other Wetlands
67% Slopes
Selected Road
Eagle Nest
LTF
Rock Pits
Private Land
02/09/00
PAGE 1
Miles and Kilometers
Road Number Miles Kilometer
3030400 2.95 4.75
2.95 4.75
0 .1 .02 Miles
Create by Erich Grebner on February 09, 2000
/luck/plots/rdcard3030400

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030400 Beginning Terminus MP 0.00 Ending Terminus MP 3.10

Existing Construction Beginning MP 0.00 Length 3.10

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 2/1 Active Sale 2 Post Sale 2/1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Active MP 0.00 to 2.16; Inactive MP 2.16 to 3.10

Travel Management Strategy:
Encourage:
Accept: High clearance vehicles to MP 2.16 (junction with 3030435). Keep road open.
Discourage:
Eliminate: All vehicle access from MP 2.16 to 3.10. Place in storage.
Prohibit:
Access Restriction Devices: Construct barrier ditch immediately after junction with road 3030435. Close road in such a manner that a suitable turnaround is provided at the junction of 3030400 and 3030435.

Travel Management Narrative:
Road is currently driveable. Pull drainage structures, create water bars, and reseed slopes before constructing barrier ditch. Keep existing road open to MP 2.16 for reforestation and locally established personal use (free use and firewood) and recreation activities. Store road from MP 2.16 to 3.10 to mitigate wildlife impacts.

District Ranger Approval (signature):________________________________ Date:__________________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch.

Timber/Logging Systems:
The 3030400 road accesses unit 572-420.

Silviculture:
Road 3030400 provides access to young growth stands 57203-511, 57202-508, 57203-507 and 57203-519. Access to stands 57203-511 and 57202-508 will not be impaired with access barrier placed after junction with road 3030435. Access to stand 57203-507 will be less than 0.5 mile on foot and alternate access exists along road 3030420. Access to stand 57203-519 will be over 1.5 miles by foot. Stand 57203-519 will be assessed for thinning potential and feasibility in approximately 10 years.

Wildlife:
Site-specific wildlife habitat concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
MP. 1.0-1.25 lies within state land selections.

Soils/Water:
The existing road is open and driveable. Maintain access to MP 2.16 with storage beyond MP 2.16 (BMP 14.22). Maintain first 2.16 miles of road (BMP 14.20). Remove all pipes prone to plugging and waterbar the rest (BMP 14.9). Consider grass seeding road surface (BMP 14.8).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Stream Crossings:
Roadcon located one Class III O/W, MC2 with a 60`` CMP. Stream crossings are from beginning to end of existing road.

A) MP 2.77 AHMU: Class III, O/W Channel Type: MC2 BF width: BF depth:
Gradient %: Structure: 60`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found Class III O/W with a 60`` CMP.

Road #: **3030400** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line L26N Photo #'s: 1090-217

Luck Lake Project Area ROD Road Card 3030420

ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030420 Beginning Terminus MP 0.00 Ending Terminus MP 2.93

Existing Construction Beginning MP 0.00 Length 2.93

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 2/1 Active Sale N/A Post Sale 2/1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Active MP 0.00 to 1.25; Inactive MP 1.25 to 2.90

Travel Management Strategy:
Encourage:
Accept: High clearance vehicles to MP 1.25. Keep road open.
Discourage:
Eliminate: All vehicle access from MP 1.25 to 2.90. Place in storage.
Prohibit:
Access Restriction Devices: Pulled bridge at MP 1.25.

Travel Management Narrative:
The 3030420 road is currently driveable to MP 1.25, where a bridge has been pulled. Keep existing road open to MP 1.25 for reforestation and locally established personal use (free use and firewood) and recreation activities.

District Ranger Approval (signature):________________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
Road 3030420 accesses young growth stands 57203-508, 518, 507, 504, 510 and 003. Stands 57203-508, 518 and 507 will remain accessible with an access barrier placed at MP 1.25. Stands 57203-504, 510 and 003 will be assessed for precommercial thinning need and feasibility in about 15 years.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
MP. 0.00 - 0.50 lies within state land selections.

Soils/Water:
Existing road is open and driveable to MP 1.25. The road traverses relatively flat gradients. Maintain road to MP 1.25 for community use (BMP 14.22 & 14.20). Put road in storage beyond MP 1.25. Evaluate structures beyond MP 1.25 for storage options (BMP 14.9). Consider grass seeding road surfaces (BMP 14.8).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Stream Crossings: One Class IIT, B/W, one Class III O/W and two Class IV, G/W stream crossings **according to Roadcon**. Stream crossings are from beginning to end of existing road segment.

A) MP 0.31 AHMU: Class IV, G/W Channel Type: HC2 BF width: BF depth:
Gradient %: Structure: 18`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found small Class IV, G/W.

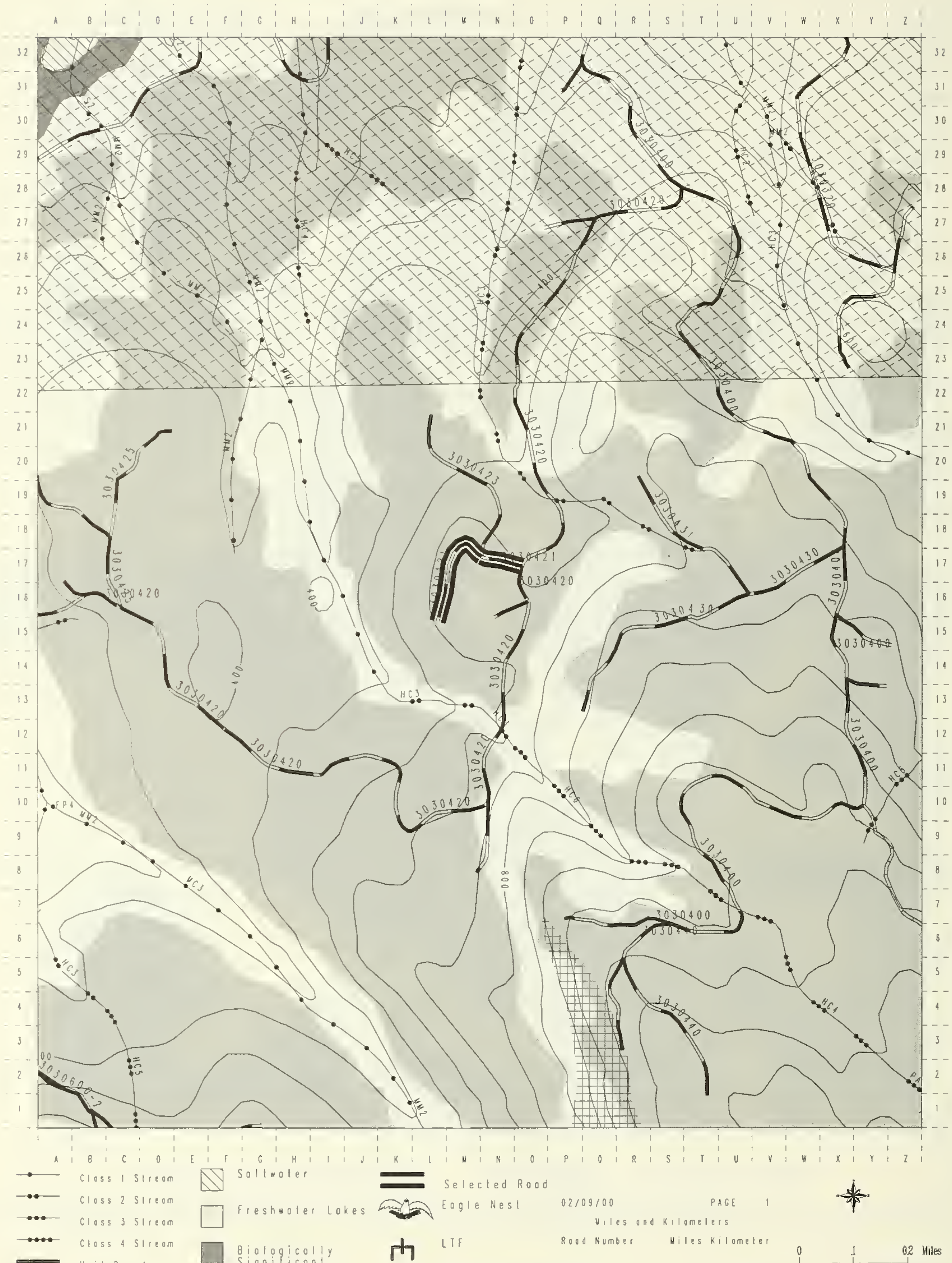
B) MP 0.42 AHMU: Class IV, G/W Channel Type: HC2 BF width: BF depth:
Gradient %: Structure: 18`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found small Class IV, G/W.

C) MP 0.81 AHMU: Class III, O/W Channel Type: HC3 BF width: 3.0 ft. BF depth:
Gradient %: Structure: 72`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon found large Class III, O/W HC3 that was previously GIS classified as Class II.

D) MP 1.26 AHMU: Class IIT, B/W Channel Type: HC3 BF width: 14.0 ft. BF depth:
Gradient %: Structure: pulled bridge Passage: yes Timing dates: 6/15 to 9/1 Substrate:
Narrative: Roadcon found pulled 60 ft. Hamilton bridge in Class II habitat; stream becomes ADF&G Catalogued # 106-30-10150 downstream ~2000 ft.

Road #: **3030420** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line L25N Photo #'s: 690-156

Luck Lake Project Area ROD Road Card 3030421



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030421 Beginning Terminus MP 0.00 Ending Terminus MP 0.27

Existing Construction Beginning MP 0.00 Length 0.27

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 2 Active Sale N/A Post Sale 2
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Active

Travel Management Strategy:
Encourage:
Accept: High clearance vehicles. Keep road open.
Discourage:
Eliminate:
Prohibit:
Access Restriction Devices: None.

Travel Management Narrative:
Road is currently driveable. Keep existing road open for reforestation and locally established personal use (free use and firewood) and recreation activities.

District Ranger Approval (signature):________________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
Road 3030421 accesses the interior of young growth stand 57203-508. No concerns.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

Soils/Water:
Road is currently open and driveable. Maintain access for community needs (BMP 14.20 & 14.22). Road traverses relatively gentle ground and has no known erosion problems.

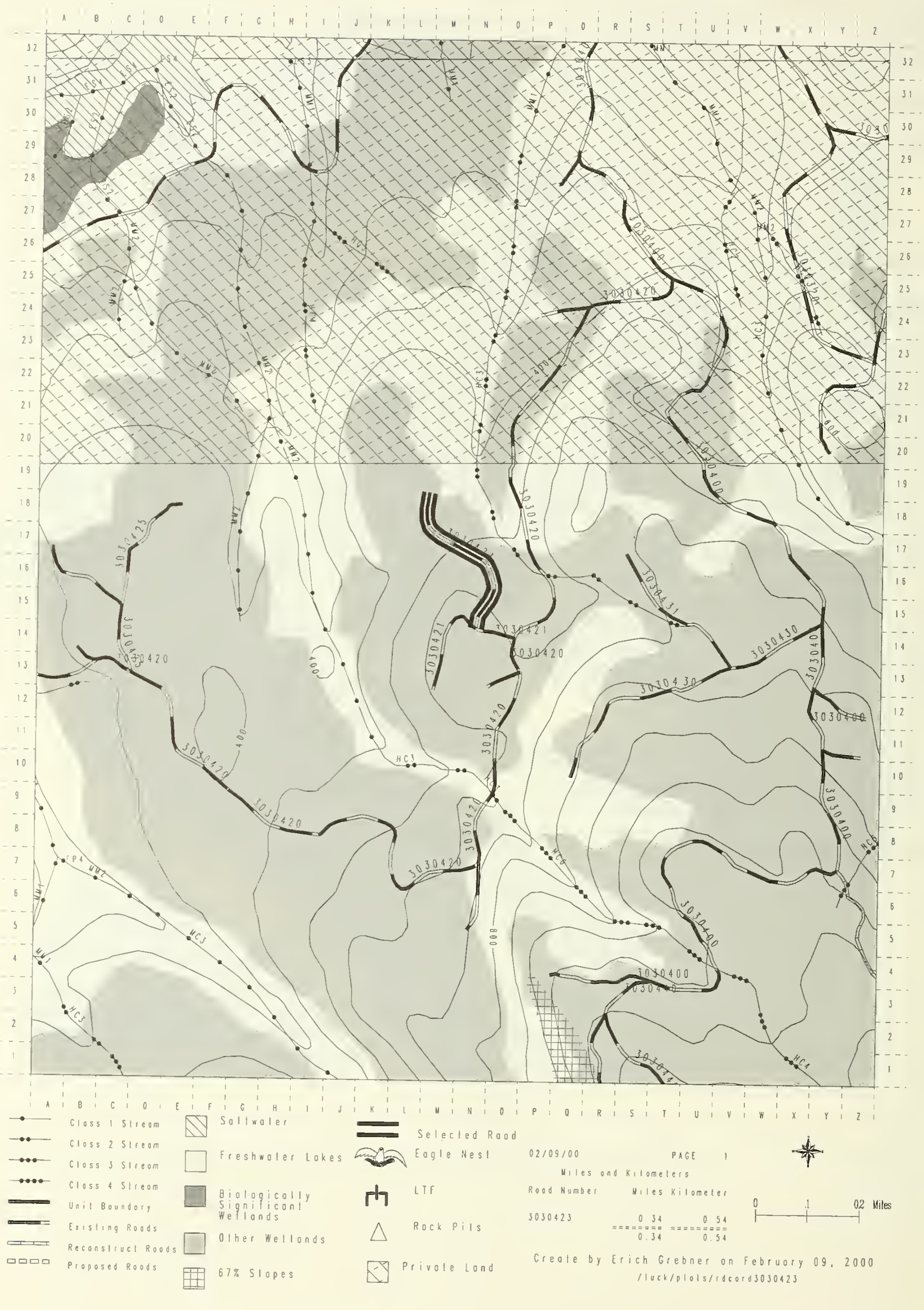
Road Location Narrative:
Existing road

Wetlands Avoidance:
Existing road.

Stream Crossings:
Roadcon found no stream crossings. No fisheries concerns.

Road #: **3030421** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line L26N Photo #'s: 1090-217

Luck Lake Project Area ROD Road Card 3030423



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030423 Beginning Terminus MP 0.00 Ending Terminus MP 0.34

Existing Construction Beginning MP 0.00 Length 0.34

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 2 Active Sale N/A Post Sale 2
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Active

Travel Management Strategy:
Encourage:
Accept: High clearance vehicles. Keep road open.
Discourage:
Eliminate:
Prohibit:
Access Restriction Devices: None.

Travel Management Narrative:
Road is currently driveable. Keep road open for reforestation and locally established personal use (free use and firewood) and recreation activities.

District Ranger Approval (signature):________________ Date:__________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
Road 3030423 accesses the interior of young growth stand 57203-508 and a portion of stand 57203-518. No concerns.

Wildlife:
No concerns.

Visual/Recreation:
No concerns.

Stream Crossings:
Roadcon found no stream crossings. No fisheries concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

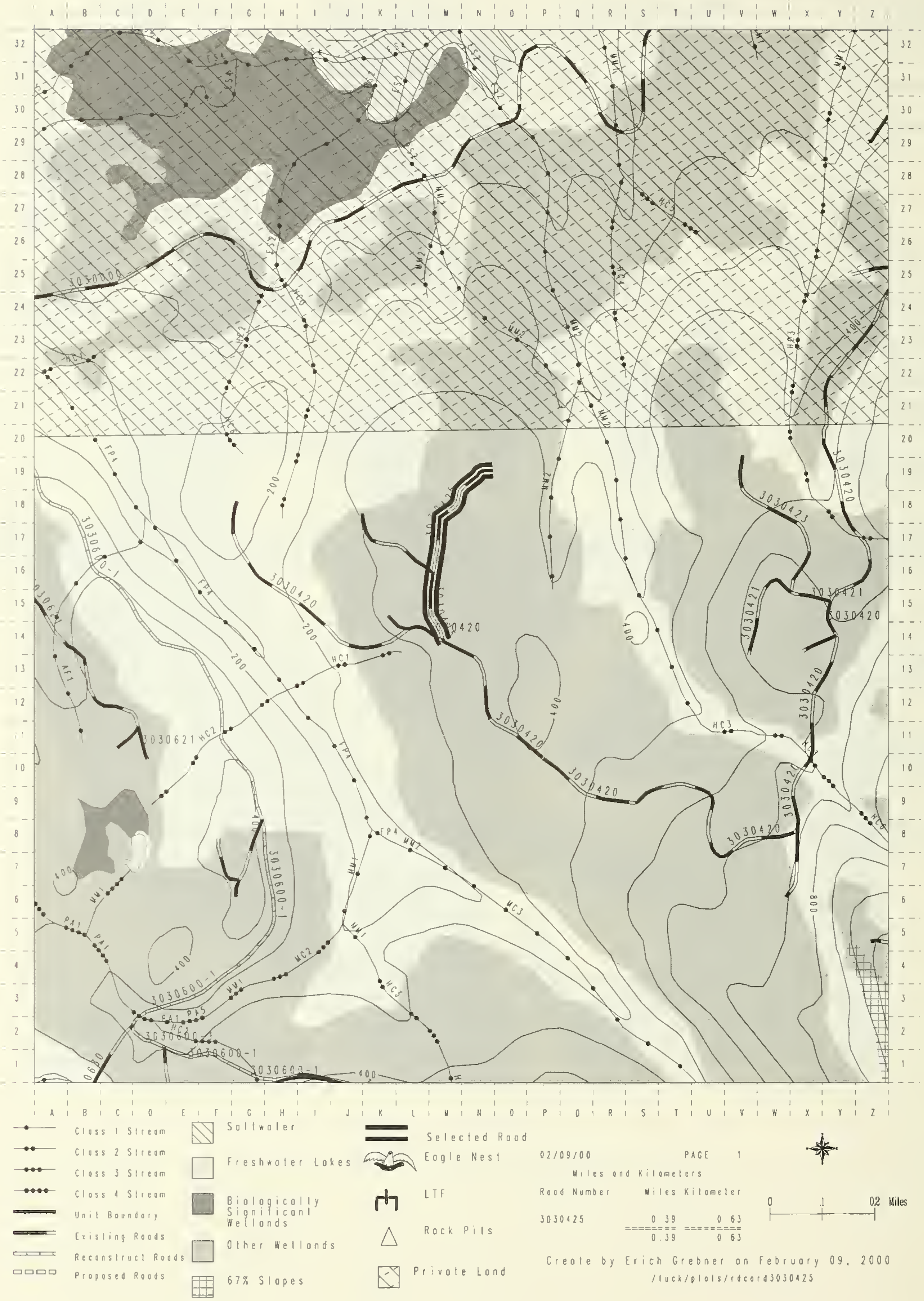
Soils/Water:
Road is currently open and driveable. Maintain access for community needs (BMP 14.20 & 14.22). Road traverses relatively gentle ground and has no known erosion problems.

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Road #: **3030423** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line L26N Photo #'s: 1090-217

Luck Lake Project Area ROD Road Card 3030425



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030425 Beginning Terminus MP 0.00 Ending Terminus MP 0.39

Existing Construction Beginning MP 0.00 Length 0.39

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Tributary on 3030420 (junction at MP 2.39), which is currently stored from MP 1.25 to 2.98 by a pulled bridge.

Travel Management Narrative:
Store road to mitigate wildlife impacts.

District Ranger Approval (signature):______________________________ Date:__________________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
Road 3030425 accesses young growth stand 57203-003. Reforestation efforts will be complete before the Luck Lake project is implemented. Stand 57203-003 will be assessed for precommercial thinning need and feasibility in about 15 years.

Wildlife:
Site-specific wildlife habitat concerns.

Visual/Recreation:
No concerns.

Stream Crossings:
Roadcon found no stream crossings. No fisheries concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

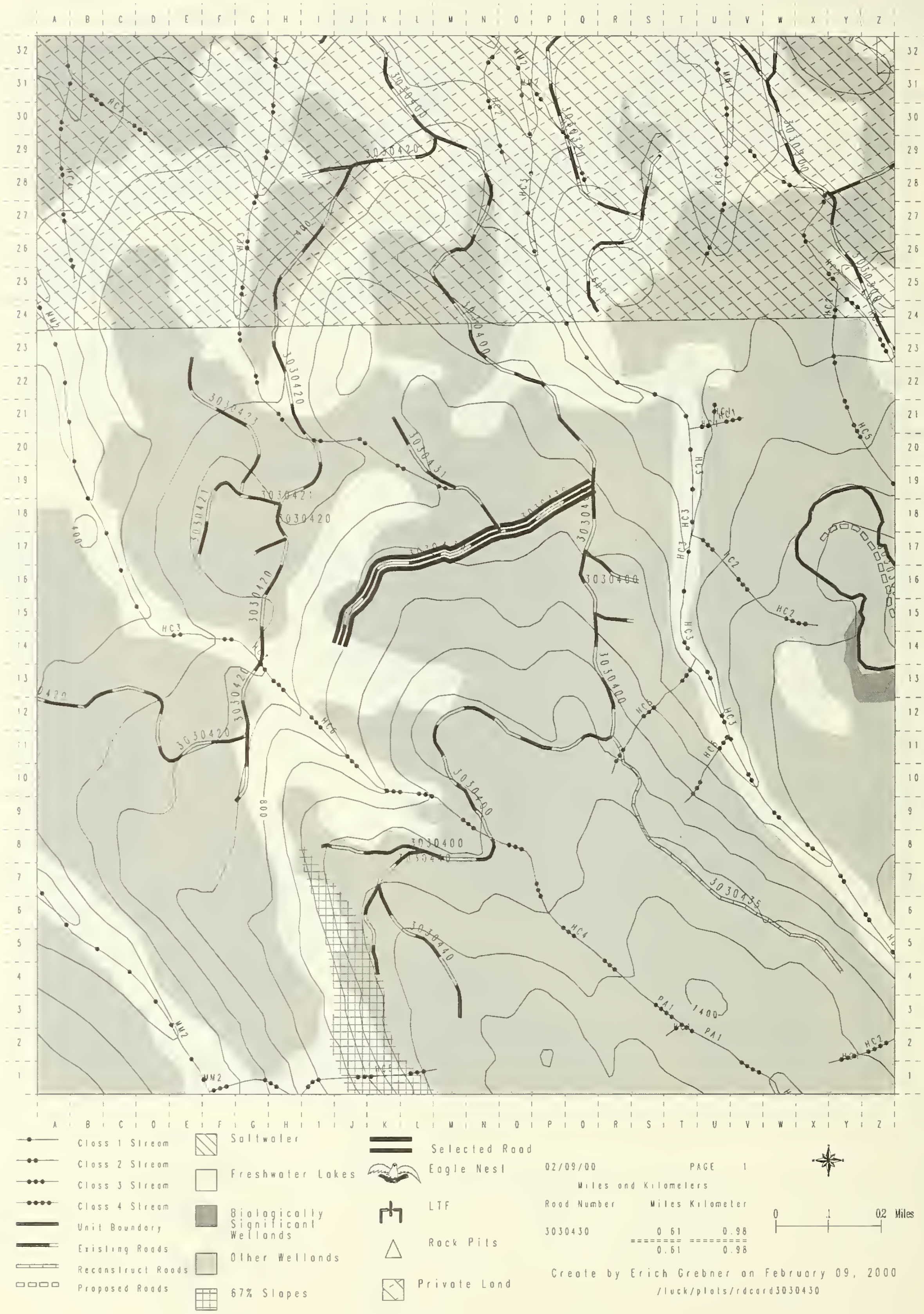
Soils/Water:
Access is discouraged by pulled bridge on 3030420 road. Place road in storage. No streams or erosion concerns identified in road condition survey. Consider grass seeding road surface (BMP 14.8).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Road #: **3030425** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line L25N Photo #'s: 690-156

Luck Lake Project Area ROD Road Card 3030430



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030430 Beginning Terminus MP 0.00 Ending Terminus MP 0.61

Existing Construction Beginning MP 0.00 Length 0.61

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Construct barrier ditch at beginning of road. Waterbar steep grades sufficiently to prevent road surface erosion. Pull pipes, create water bars, and reseed slopes.

Travel Management Narrative:
Store road to mitigate wildlife concerns and reduce maintenance costs.

District Ranger Approval (signature):______________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%;

Timber/Logging Systems:
No concerns.

Silviculture:
No concerns as access is maintained along road 3030420 to MP 1.25 for precommercial thinning treatments in stand 57203-518 (99 acres).

Wildlife:
Site specific wildlife habitat concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Existing road is open and driveable. High-risk stream crossings should be removed or ditched. Waterbar remaining stream crossings and grass seed road surface (BMP 14.8 and 14.9.) Put road in storage (BMP 14.22). Keep any excavated material out of the wetland located at the beginning of the road. (BMP 12.5 and 33 CFR BMP 5).

Road Location Narrative:
Existing Road

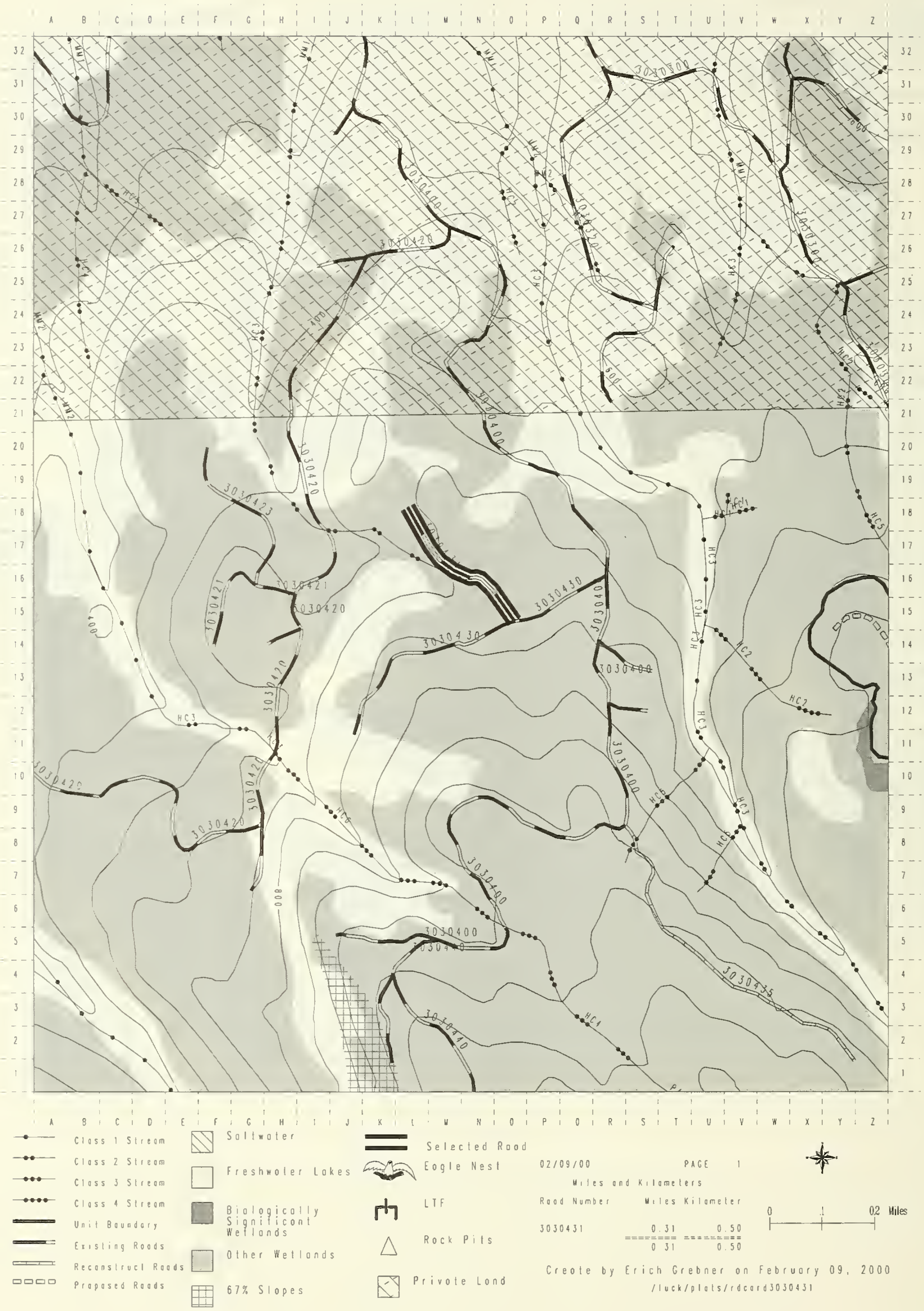
Wetlands Avoidance:
Existing road.

Stream Crossings:
One Class III O/W located **based on Roadcon**. No other fisheries concerns.

A) MP: 0.30 AHMU: Class III, O/W Channel Type: HC1 BF width: BF depth:
Gradient %: Structure: 36`` CMP Passage: No Timing dates: None Substrate:
Narrative: Roadcon located this water quality stream; 36`` CMP with a 3.0 ft. perched outlet.

Road #: **3030430** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 26N Photo #'s: 1090-216

Luck Lake Project Area ROD Road Card 3030431



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030431 Beginning Terminus MP 0.00 Ending Terminus MP 0.31

Existing Construction Beginning MP 0.00 Length 0.31

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Tributary to 3030430, which is stored with a barrier ditch. Waterbar steep grades sufficiently to prevent road surface erosion. Pull pipes, create water bars, and reseed slopes.

Travel Management Narrative:
Store road to mitigate wildlife concerns and reduce maintenance costs.

District Ranger Approval (signature):____________________ Date:____________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%.

Timber/Logging Systems:
No concerns.

Silviculture:
Road 3030431 will be effectively closed with closure of 3030430. Access to the upper northeast portion of young growth stand 57203-518 will be by foot. The stand is scheduled for thinning needs assessment about year 2007.

Wildlife:
Site specific wildlife habitat concerns.

Visual/Recreation:
No concerns.

Cultural:
Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Existing road is open and driveable. High-risk stream crossings should be removed. Waterbar remaining stream crossings (BMP 14.8 and 14.9.) Eliminate vehicular access (BMP 14.22) storage.

Road Location Narrative:
Existing Road

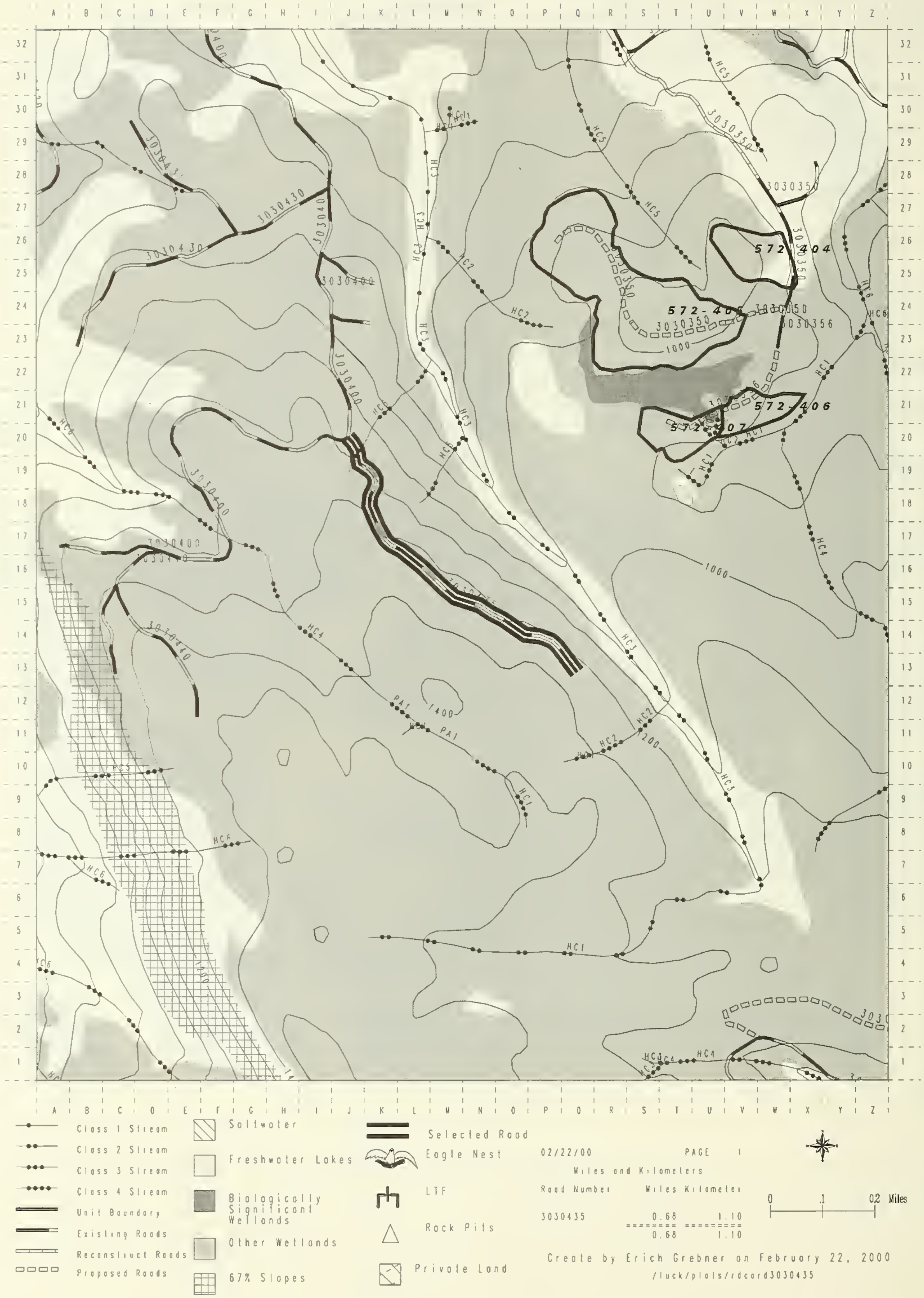
Wetlands Avoidance:
Existing road.

Stream Crossings:
One Class III O/W stream crossing **located by Roadcon**; no other concerns.

A) MP: 0.80 AHMU: Class III, O/W Channel Type: HC1 BF width: BF depth:
Gradient %: Structure: 24`` CMP Passage: No Timing dates: None Substrate:
Narrative: Roadcon located this water quality stream.

Road #: **3030431** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 26N Photo #'s: 1090-216

Luck Lake Project Area ROD Road Card 3030435



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030435 Beginning Terminus MP 0.00 Ending Terminus MP 0.68

Existing Construction Beginning MP 0.00 Length 0.68

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Construct barrier ditch at beginning of road. Pull pipes, create water bars, and reseed slopes.

Travel Management Narrative:
Store road to mitigate wildlife and wetland concerns.

District Ranger Approval (signature):________________________________ Date:____________________

Design Narrative Information:
Design standards are as follows: Road width 14'; Design speed 10 MPH.; Max grade 20%; Surface shot rock; minimize ditches and roll grade to drain and construct minimum standard J-hole turnouts.

Timber/Logging Systems:
The 3030435 road access timber sale unit 572-420.

Silviculture:
No concerns. Access to cultural treatments is provided by 3030400 road. Access will be by foot or helicopter to accomplish required reforestation work in unit 572-420.

Wildlife:
Site-specific wildlife habitat concerns.

Visual/Recreation:
No concerns.

Stream Crossings:
No known crossings **based on unit recon.**

Cultural:
Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

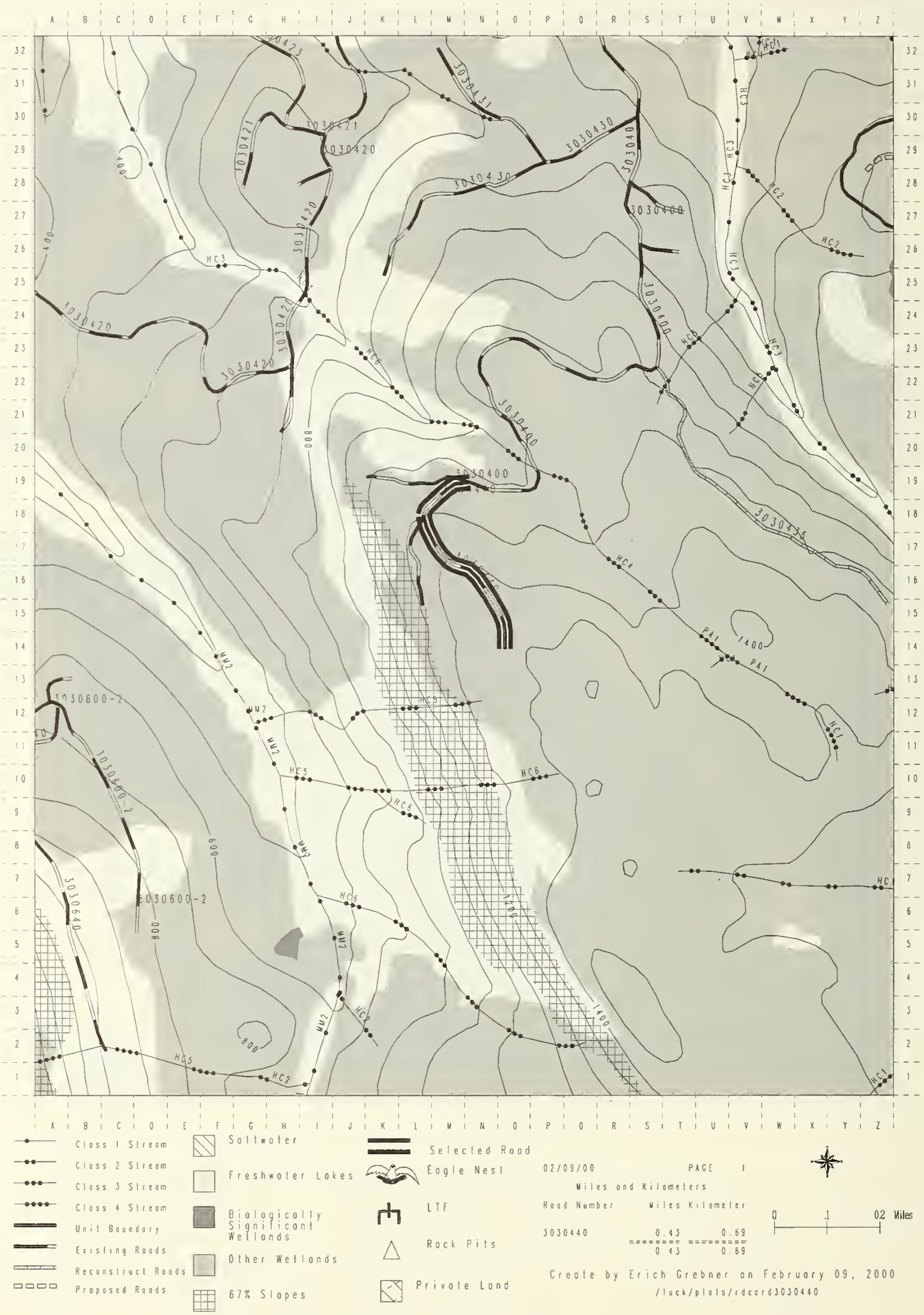
Soils/Water:
The 3030435 road will be put in storage following timber harvest (BMP 14.22). Protect local water supplies by implementing oil pollution prevention and hazardous substance spill prevention measures BMP's 12.8 and 12.9).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road

Road #: **3030435** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 26N Photo #'s: 1090-215 & 216

Luck Lake Project Area ROD Road Card 3030440



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030440 Beginning Terminus MP 0.00 Ending Terminus MP 0.43

Existing Construction Beginning MP 0.00 Length 0.43

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access, place road in storage.
Prohibit:
Access Restriction Devices: Tributary to 3030400 which is closed at the junction of 3030435 road.

Travel Management Narrative:
Store road to mitigate wildlife impacts. Create barrier ditch at beginning of road, remove all drainage structures, and water bar all steep grades.

District Ranger Approval (signature):________________________ Date:______________

Design Narrative:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch.

Timber/Logging Systems:
No concerns.

Silviculture:
Road provides access to the upper end of young growth stand 57203-507 (108 acres), 57203-519 (68 acres) and proximal access (helicopter harvest unit) to young growth stand 57203-520 (155 acres). Road closure may result in prohibitive future costs for precommercial treatment of 57203-519. Access to 57203-507 is possible along road 3030420. Road 3030440 accesses the interior of young growth stand 57203-519 and will be closed approximately 1.5 miles away with closure of road 3030400 junction 3030435. See narrative for road 3030400.

Wildlife:
Site-specific wildlife habitat concerns.

Stream Crossings:
Roadcon found no stream crossings. No fisheries concerns.

Visual/Recreation:
No concerns.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No concerns.

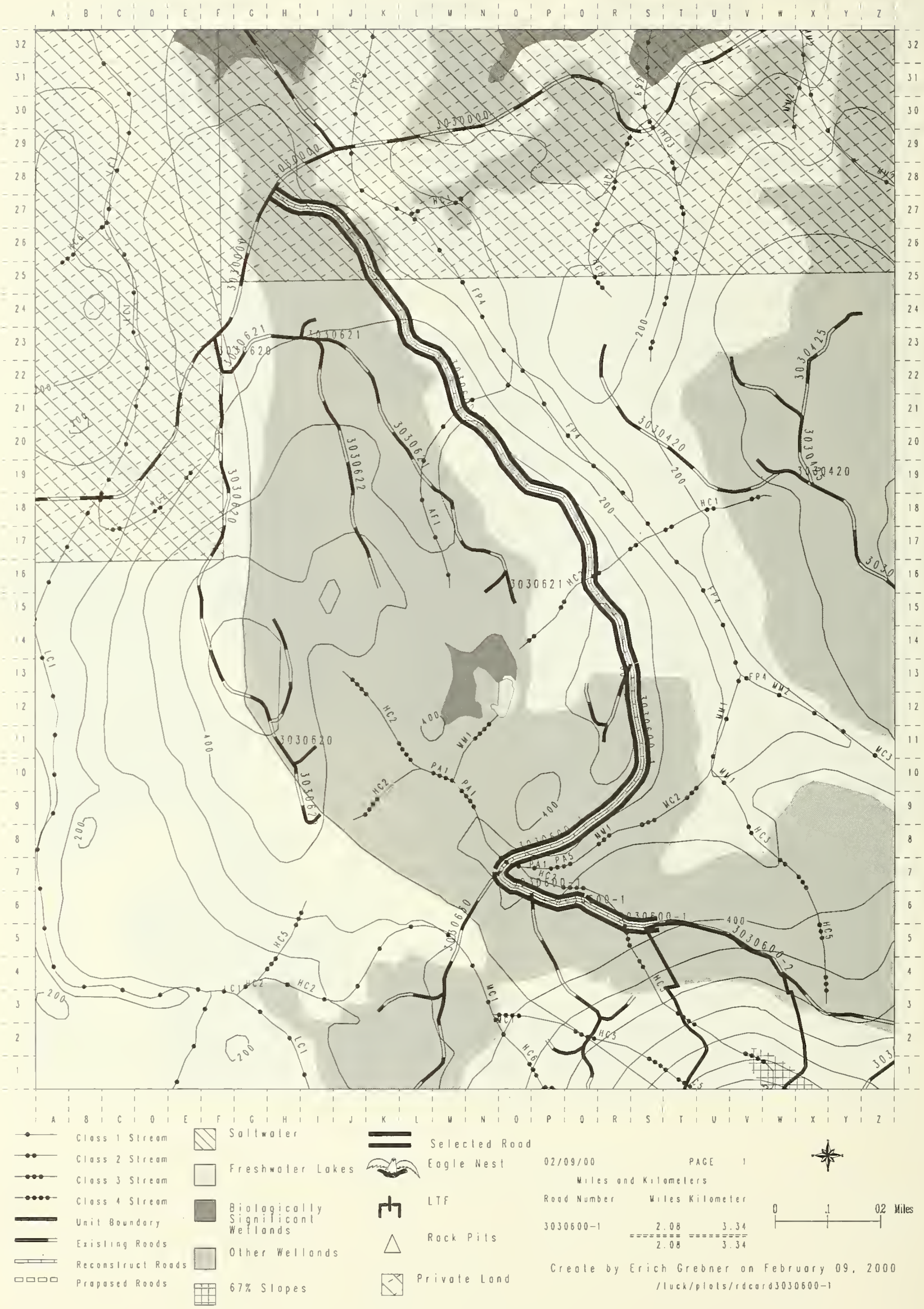
Soils/Water:
Existing road is open and driveable. Road has some steep grades and should be waterbarred and grass seeded (BMP 14.8). No streams.

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

Road #: **3030440** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line L26N Photo #'s:
1090-215

Luck Lake Project Area ROD Road Card 3030600-1



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030600-1 Beginning Terminus MP 0.00 Ending Terminus MP 2.08

Reconstruction Beginning MP 0.00 Length 2.08

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 2
Intended Purpose and Use: Silvicultural activities and post sale access.

AFRPR Post Sale Status: Active

Travel Management Strategy:
Encourage:
Accept: High clearance vehicles.
Discourage:
Eliminate:
Prohibit:
Access Restriction Devices: None.

Travel Management Narrative:
Existing road is to remain open for post sale and reforestation activities and local established personal use (free-use and firewood) and recreation activities.

District Ranger Approval (signature):________________ Date:__________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch.

Timber/Logging Systems:
Road accesses unit 572-425.

Silviculture:
Road accesses units 572-425 for required reforestation work. Road also accesses other potential cultural treatments for the near future.

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Coffman Cove. No sidecast. Locate rockpit in area unseen from Coffman Cove.

Cultural:
Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Minor reconstruction. Keep any excavated material out of wetlands or riparian areas (BMP's 12.5, 12.6 and 14.12).

Road Location Narrative:
Existing Road accesses Unit 572-425. Reconstruct ditch, malfunctioning drainage structures, washed road surface and some brushing .

Wetlands Avoidance:
Existing road.

Stream Crossings:
There is One Class II B/W, one Class III O/W, two Class IV O/W and three Class IV G/W **based on Roadcon**. The crossings listed below are from the beginning to end of the road segment.

A) MP: 0.03 AHMU: Class II, B/W Channel Type: HC1 BF width: BF depth:
Gradient %: Structure: 36`` CMP Passage: no Timing dates: 6/15 to 8/7 Substrate:
Narrative: Roadcon located crossing and sampled Dolly Varden; close proximity to catalogued Coho, pink, and chum habitat.

B) MP: 0.29 AHMU: Class IV G/W Channel Type: HC2 BF width: BF depth:
Gradient %: Structure: 18`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon found 18`` CMP, Class IV, G/W.

C) MP: 0.59 AHMU: Class III, O/W Channel Type: AF1 BF width: BF depth:
Gradient %: Structure: 48`` CMP Passage: no Timing dates: 6/15 to 9/1 Substrate:
Narrative: Roadcon located crossing with 2.9 ft. outlet perch; close proximity to catalogued Coho habitat.

D) MP: 1.04 AHMU: Class IV G/W Channel Type: HC2 BF width: BF depth:
Gradient %: Structure: 24`` CMP Passage: No Timing dates: none Substrate:
Narrative: Water quality stream located by Roadcon; 24`` CMP.

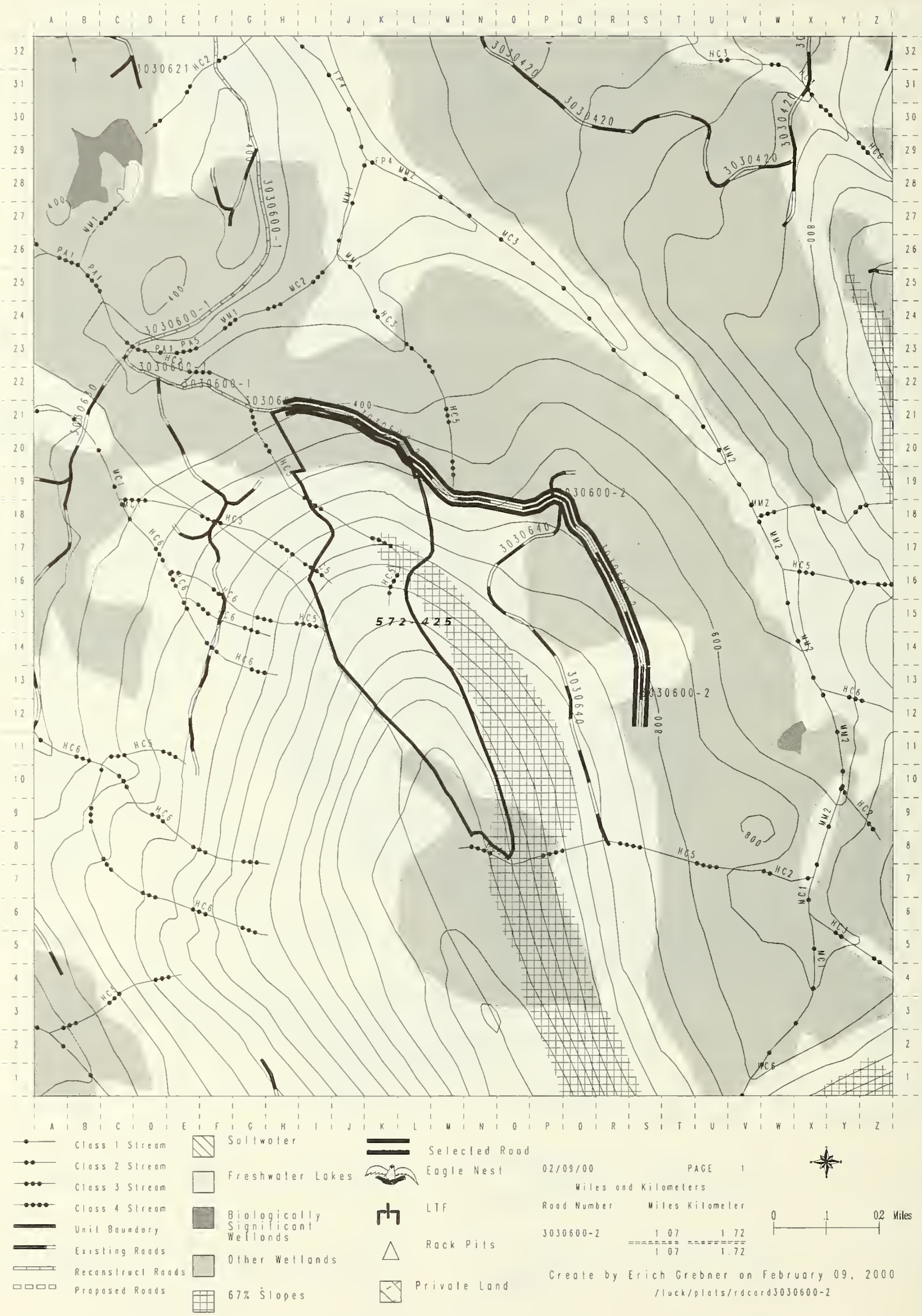
E) MP: 1.72 AHMU: Class IV, O/W Channel Type: PA1 BF width: 4.0 ft. BF depth:
Gradient %: Structure: 60`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon located Class IV with 4.0 ft. active channel at 1% gradient.

F) MP: 1.81 AHMU: Class IV, G/W Channel Type: PA1 BF width: BF depth:
Gradient %: Structure: 36`` CMP Passage: no Timing dates: none Substrate:
Narrative: Roadcon located channel with 36`` CMP and 3% stream gradient.

G) MP: 1.95 AHMU: Class IV, O/W Channel Type: HC2 BF width: BF depth:
Gradient %: Structure: 36`` CMP Passage: no Timing dates:none Substrate:
Narrative: Roadcon located stream with 36`` CMP.

Road #: **3030600-1** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 25N Photo #'s: 690-156

Luck Lake Project Area ROD Road Card 3030600-2



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030600-2 Beginning Terminus MP 2.08 Ending Terminus MP 3.15

Existing Construction Beginning MP 2.08 Length 1.07

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 2 Active Sale 2 Post Sale 2
Intended Purpose and Use: Silvicultural activities and post sale access.

AFRPR Post Sale Status: Active

Travel Management Strategy:
Encourage:
Accept: High clearance vehicles.
Discourage:
Eliminate:
Prohibit:
Access Restriction Devices: None.

Travel Management Narrative:
Existing road is to remain open for post sale and reforestation activities, and local established personal use (free-use and firewood) and recreation activities.

District Ranger Approval (signature):________________________ Date:________________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch.

Timber/Logging Systems:
Road accesses unit 572-425.

Silviculture:
Road accesses unit 572-425. Access to precommercial thinning opportunities in young growth stands 57203-517 (69 acres), 2517 (11 acres), 513 (108 acres) and 521 (87 acres) is maintained. No concerns.

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Coffman Cove. No sidecast. Locate rockpit in area unseen from Coffman Cove.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Minor reconstruction. Keep any excavated materials out of wetlands or riparian areas (BMP's 12.5, 12.6, and 14.12).

Road Location Narrative:
Existing Road accesses Unit 572-425. Reconstruct ditch, malfunctioning drainage structures, washed road surface and some brushing.

Wetlands Avoidance:
Existing road.

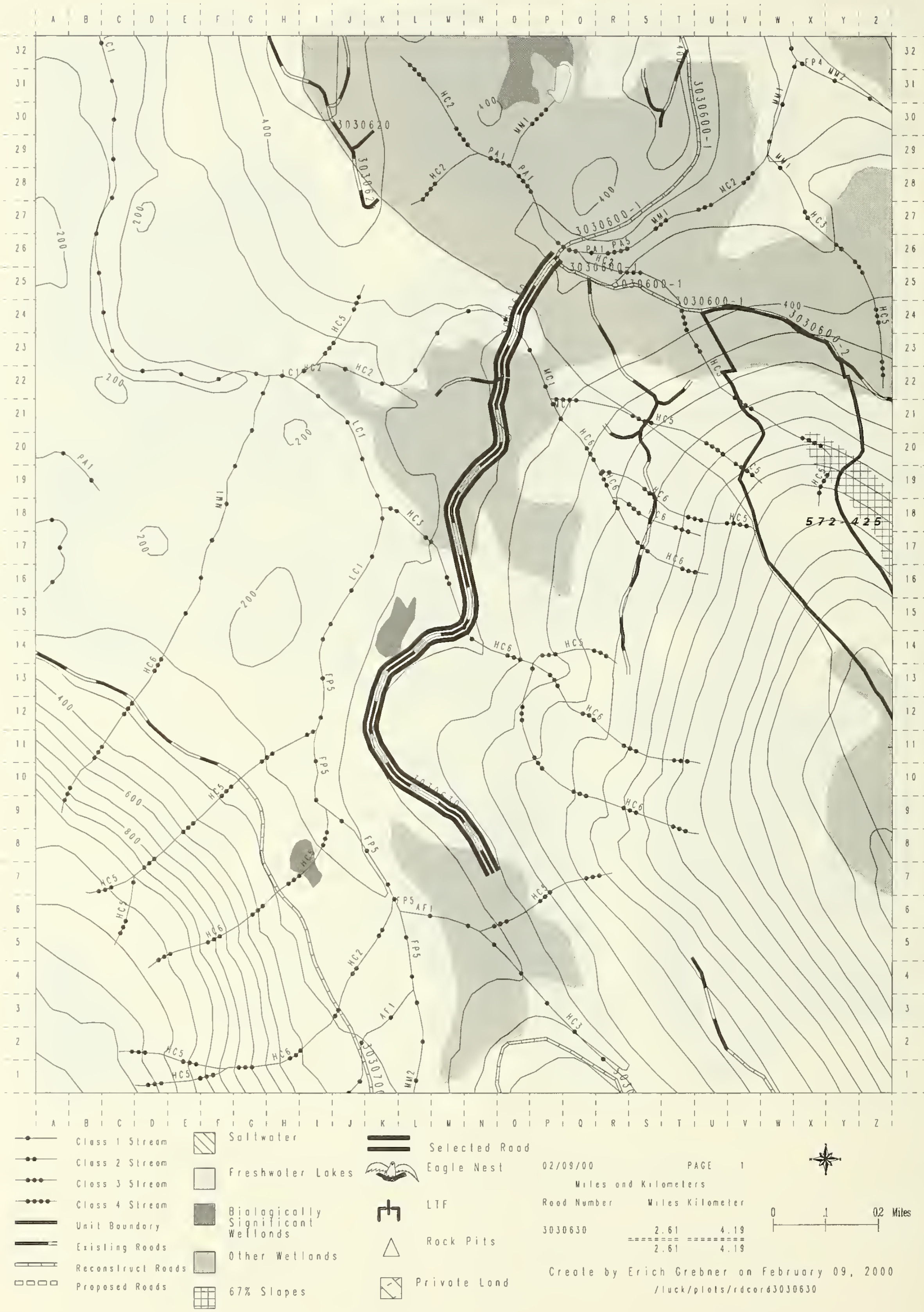
Stream Crossings:
There are two Class IV, G/W stream crossings on this road segment **based on Roadcon**. There are no other fisheries concerns.

A) MP: 2.08 AHMU: Class IV G/W Channel Type: MM1 BF width: BF depth:
Gradient %: 4 Structure: 24`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon found 24`` CMP, Class IV, G/W.

C) MP: 2.75 AHMU: Class IV G/W Channel Type: HC5 BF width: BF depth:
Gradient %: 15 Structure: 18`` CMP Passage: No Timing dates: none Substrate:
Narrative: Roadcon found 18`` CMP, Class IV, G/W.

Road #: **3030600-2** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 25N Photo #'s: 690-157

Luck Lake Project Area ROD Road Card 3030630



Road No. 3030630 Beginning Terminus MP 0.00 Ending Terminus MP 2.61

Existing Construction Beginning MP 0.00 Length 2.61

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale N/A Post Sale 1
Intended Purpose and Use: Silvicultural activities.

AFRPR Post Sale Status: Inactive

Travel Management Strategy:
Encourage:
Accept:
Discourage:
Eliminate: All vehicle access. Place in storage.
Prohibit:
Access Restriction Devices: Construct Barrier ditch at beginning of road after completing pre-commercial thinning activities. Waterbar steep grades sufficiently to prevent road surface erosion. Pull pipes, create water bars, and reseed slopes.

Travel Management Narrative:
Store road to mitigate wildlife concerns and reduce maintenance costs.

District Ranger Approval (signature):________________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH.; Max grade 20%;

Timber/Logging Systems:
No concerns.

Silviculture:
Road accesses approximately 100 acres of potential near future precommercial thinning treatment opportunities in young growth stands 57301-547 (33 acres) and 57301-549 (72 acres). The 72-acre opportunity in stand 57301-549 may be forfeit, with access restricted to foot travel of over 1.5 miles.

Wildlife:
Site-specific wildlife concerns.

Visual/Recreation:
No concerns.

Cultural:
Road is outside of high probability areas for cultural resources. Post-construction monitoring on a small sample of roads will be implemented.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Existing road is open and driveable. The 630 road is planned for storage (BMP 14.22). Drainage structures prone to plugging should be removed. All structures left in place should be waterbarred (BMP 14.9). Waterbar steep grades (BMP 14.8). Maintain existing alder cover to the extent practicable (BMP 14. 8). Reestablish resident fish passage if blocked by road (BMP 12.5 and 404f guidelines). Timing may be necessary for culvert removal, see fisheries section (BMP 14.6).

Road Location Narrative:
Existing Road

Wetlands Avoidance:
Existing road.

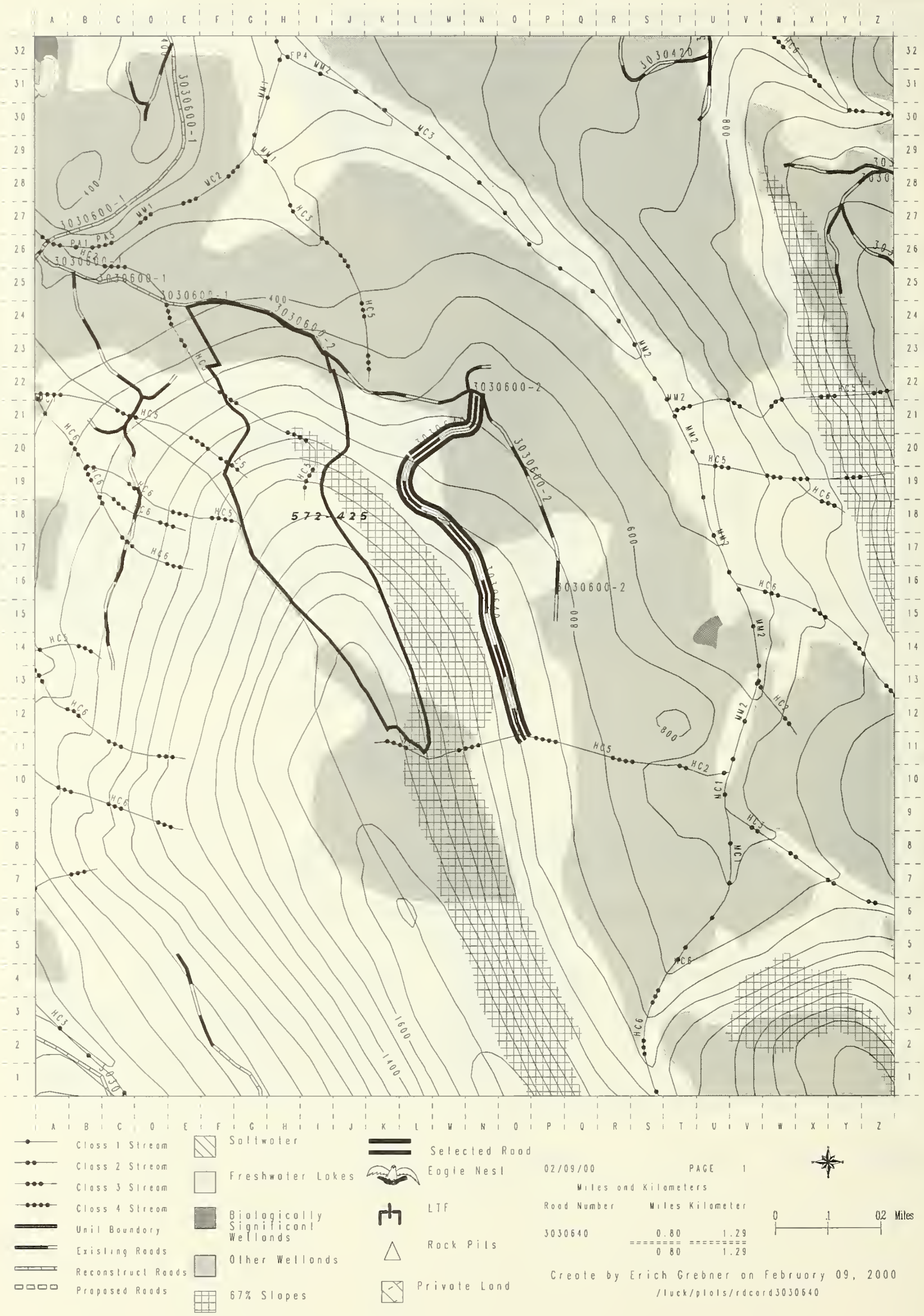
Stream Crossings:
One Class IV O/W (GIS Class II), one Class IV G/W (GIS Class I) stream crossing **based on Roadcon**. The crossings are listed from the beginning to end of the road segment.

A) MP: 0.29 AHMU: Class IV, G/W Channel Type: MC1 BF width: BF depth:
Gradient %: Structure: 24`` CMP Passage: no Timing dates: 6/15 to 9/1 Substrate:
Narrative: Roadcon found 2.0 ft. outlet perch at this crossing; may preclude passage. Close proximity to catalogued Coho and pink habitat.

B) MP: 0.78 AHMU: Class III, O/W Channel Type: HC2 BF width: BF depth:
Gradient %: Structure: 48`` CMP Passage: no Timing dates: 6/15 to 9/1 Substrate:
Narrative: Roadcon found 48`` CMP with no fish. Near Class I Coho habitat.

Road #: **3030630** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 25N Photo #'s: 690-157

Luck Lake Project Area ROD Road Card 3030640



ROAD MANAGEMENT OBJECTIVES AND ROAD CARD - LUCK LAKE ROD

Road No. 3030640 Beginning Terminus MP 0.00 Ending Terminus MP 0.80

Existing Construction Beginning MP 0.00 Length 0.80

Road Management Objectives:
Funct. Class L Traffic Service Level D Hwy. Safety Act NO Design Veh. LT
Critical Veh. LB Maint. Level: 1 Active Sale 2 Post Sale 2
Intended Purpose and Use: Silvicultural activities and post sale access.

AFRPR Post Sale Status: Active

Travel Management Strategy:
Encourage:
Accept: High clearance vehicles.
Discourage:
Eliminate:
Prohibit:
Access Restriction Devices:

Travel Management Narrative:
Existing road is to remain open for post sale and reforestation activities, and local established personal use (free-use and firewood) and recreation

District Ranger Approval (signature):______________________ Date:______________

Design Narrative Information:
Existing road 14' wide; Design speed 10 MPH; Max. grade 20%; shot rock surfacing; and 1 ft ditch.

Timber/Logging Systems:
Road accesses unit 572-425.

Silviculture:
Road accesses unit 572-425 along with potential precommercial thinning opportunities in young growth stands 57203-517 (69 acres), 2517 (11 acres), 513 (108 acres) and 521 (87 acres). No concern with planned road status.

Wildlife:
No concerns.

Visual/Recreation:
Minimize cuts and fills visible to Coffman Cove. No sidecast. Locate rockpit in area unseen from Coffman Cove.

Cultural:
No concerns.

Lands/Minerals/Geology/Karst:
No known minerals, geology and karst resource concerns.

Soils/Water:
Minor reconstruction. Maintain drainage and control sidecast of any excavated materials (BMP's 14.8, 14.12, and 14.20). Road to remain open for community use (BMP 14.22).

Road Location Narrative:
Existing road.

Wetlands Avoidance:
Existing road.

activities.

Stream Crossings:
There are no known stream crossings on this road segment **based on Roadcon.** There are no known fisheries concerns.

Road #: **3030640** Map #: Craig D-3 NE Aerial Photo: Yr. 91 Line 25N Photo #'s: 690-157

Luck Lake Timber Sales

Final Environmental Impact Statement

Tongass National Forest
USDA Forest Service, Alaska

Lead Agency	USDA Forest Service Tongass National Forest
Responsible Official	Forest Supervisor Tongass National Forest Federal Building Ketchikan, Alaska 99901
For Further Information Contact	David Schmid, District Ranger or Chris Minnillo, Team Leader Thorne Bay Ranger District Tongass National Forest P.O. Box 19001 Thorne Bay, Alaska 99919 (907) 828-3304

Abstract

The USDA Forest Service proposes to harvest up to approximately 17 million board feet (MMBF) of timber in the Luck Lake Project Area, Thorne Bay Ranger District, Tongass National Forest. Timber volume would be sold from this project in multiple sales of varying sizes. The actions analyzed in this EIS are designed to implement direction contained in the 1999 modified Tongass Land and Resource Management Plan. The Final EIS describes six alternatives which provide different combinations of resource outputs and spatial locations of harvest units. All action alternatives propose adjusting the boundaries of one small reserve, and the boundaries and location of another to include more high-value winter habitat for deer (lower-elevation old-growth forest). Two adjustment scenarios have been proposed. Alternatives 2, 3, 4, and 5 include one scenario, while Alternative 6 includes the other. The alternatives include: 1) No-action, proposing no new harvest from the Project Area at this time; 2) minimizing potential effects to areas of key wildlife and fish habitat; 3) harvesting the most timber while minimizing new road construction; 4) (Proposed Action) maximizing the contribution to the timber products industry; 5) providing economically efficient timber sales; and 6) maximizing the contribution to the timber products industry.

Contents

Figures

Tables

Tables (continued)

Summary

Summary

Proposed Action

The 35,509-acre Luck Lake project area is located approximately 17 air miles north of Thorne Bay, Alaska. It encompasses an area of north central Prince of Wales Island that extends from the community of Coffman Cove south to just north of Little Ratz Harbor. The Luck Lake project area is within the Thorne Bay Ranger District of the Ketchikan Administrative Area, Tongass National Forest, Alaska. It includes Value Comparison Units (VCU's) 572, 581, 582, and part of 583.

The Forest Service proposes to harvest up to approximately 17 MMBF of timber from approximately 1,038 acres of National Forest System land through a series of timber sales beginning in 2000. This would require up to about 13 miles of new road construction and 10 miles of road reconstruction. Logs would be transported to existing log transfer or processing facilities. Timber would be sold from this project in multiple sales of varying sale sizes.

The proposal includes timber harvesting on selected suitable timberlands for the production of sawtimber and other wood products, to help meet market demands for timber and provide resource production opportunities and employment for local communities. Harvest methods other than traditional clearcutting are proposed; harvest is expected to improve timber growth and contribute toward a balance of age classes. Three areas allocated to Old-growth Habitat as part of the forest-wide system of old-growth habitat reserves are included, and location and boundary changes for two of these are proposed for wildlife habitat considerations, resulting in a non-significant amendment to the Forest Plan. Finally, the proposal includes development of a transportation access management plan for the Project Area to guide current and future management of the road system.

Purpose and Need

The Luck Lake Project is proposed at this time to implement the goals and objectives of the Forest Plan, and to help move the Project Area toward desired future conditions described in that plan. The Forest Plan includes forest-wide goals and objectives, and area-specific (land use designation) goals, objectives, and desired future conditions. Applicable forest-wide goals and objectives (Forest Plan, pp. 2-3 and 2-4) include:

1. Manage the timber resource for production of saw timber and other wood products from suitable timber lands made available for timber harvest, on an even-flow, long-term sustained yield basis and in an economically efficient manner.

2. Seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber, and the market demand for the planning cycle.

3. Provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska.

4. Support a wide range of natural resource employment opportunities within Southeast Alaska's communities.

Land Use Designations

Five Forest Plan land use designations are within the project area. The goals of two of the four, Modified Landscape and Timber Production, are similar to the forest-wide goals and objectives listed above. For Timber Production, the desired future condition is to have healthy tree stands in a balanced mix of age classes from young stands to trees of harvestable age, and a road system providing access for timber management as well as recreation, hunting and fishing, and other public uses. Modified Landscape includes but modifies these desired conditions to take into account the scenic quality of foreground landscapes.

The third land use designation in the project area is Old-growth Habitat. Its primary goal is to maintain areas of old-growth forests to provide habitat for old-growth associated wildlife species. Within areas allocated to Old-growth Habitat, the desired condition is that all forested areas attain old-growth forest characteristics and provide a diversity of old-growth habitat types.

The fourth land use designation in the Project Area is Semi-remote Recreation. Its goals include providing predominantly natural or natural-appearing settings for semi-primitive types of recreation and tourism and providing opportunities for a moderate degree of independence, closeness to nature, and self-reliance. For Semi-remote Recreation, the desired future condition is characterized by generally unmodified natural environments. Ecological processes and natural conditions are only minimally affected by past or current human uses or activities. Interactions between users are infrequent.

The fifth land use designation in the project area is Transportation/Utiltiy System. Its goal is to provide for, and/or facilitate the development of, existing and future major public Transportation and Utility Systems, including those identified by the State of Alaska and the Alaska Energy Authority. Analysis of the state road corridor within this land use designation will not be included as part of the Luck Lake project. In Chapter 1, Table 1-1 gives the acreages within the Project Area of each land use designation, and of the State and private lands. Figure 1-2 displays the location of the land allocations and VCU's within the Project Area.

Project Issues

Significant issues for the Luck Lake Project were identified through public and internal scoping. The following five issues are addressed through the proposed action and alternatives.

Issue 1: High Value Wildlife and Fish Habitat

The Forest Plan includes a forest-wide network of old-growth habitat reserves, and detailed standards and guidelines specific to individual species and important habitat types. The application of some of this direction, as well as the need for additional measures, is left to project-specific analysis. This issue relates to maintaining the value and function of the following key local wildlife and fish habitats that support subsistence and related resources: 1) high value deer winter range, 2) old-growth habitat connectivity, and 3) cumulative effects within the Luck Creek/Luck Lake/Eagle Creek watershed or "Luck Lake drainage" due to the amount of previous harvest within that drainage and its high sport fish uses.

Issue 2: Timber Sale Economics

This issue relates to the economic viability of proposed timber sales, and the potential employment and revenues generated by the project.

Issue 3: Timber Sale Size and Complexity

This issue relates to the ability of smaller companies to compete for timber sales in the Project Area. Higher volume sales coupled with extensive road construction may be beyond

the means of smaller timber purchasers. Likewise, helicopter or large cable logging systems may also preclude all but the larger companies.

Issue 4: New Road Construction

This issue relates to construction of roads into areas available for timber management but currently unroaded. Of particular concern is the Baird Peak area: whether or not any roads should be built there, and if any are built, their management after completion of timber harvest.

Issue 5: Access Management

This issue relates to how all of the existing and proposed roads will be managed upon completion of timber harvesting, in particular, if they are to be left open or closed to public use. Access management considerations include resource needs, the cost of road maintenance, proximity to communities, and recreation and other uses desired by the public.

Comparison of Alternatives

Each alternative addresses the project issues differently. Listed below is a brief discussion of how the alternatives respond to the five significant issues. This information is summarized in Table Summary-1.

Issue 1: High Value Wildlife and Fish Habitat

Alternative 1 has no timber harvest or road construction and, in comparison with the other alternatives, has no adverse effects to fish or wildlife habitats. All action alternatives incorporate and apply Forest Plan standards and guidelines for riparian areas, the beach and estuary fringe, goshawk, and marten. No timber harvest would occur in riparian or beach and estuary fringe habitats in any alternative, all harvest units will be partial cut, using two-aged systems.

Old-growth Habitat Reserves

Each VCU in the Project Area includes a small old-growth habitat reserve (Old-growth Habitat Land Use Designation), part of a forest-wide system of old-growth habitat reserves. Alternative 1 incorporates the reserve configurations identified in the Forest Plan. The reserves identified in VCU's 582 and 583 do not meet the minimum requirements for total acres and the reserves in VCU's 581 and 583 do not meet the minimum requirements for acres of productive old growth (POG) for this alternative. Alternatives 2, 3, 4, and 5 incorporate reserve configurations developed with interagency involvement, which include more low-elevation deer winter habitat. No changes are proposed for the small reserve in VCU 572. The boundaries of the reserve in VCU 581, and boundaries and location of the reserve in VCU 582 and 583 are proposed for change to incorporate more low-elevation POG. 30 percent of the acreage allocated to VCU 583 were mapped in adjacent VCU 582 to better meet the need for low-elevation habitat within the small old-growth habitat reserve. Alternative 6 incorporates reserve configurations similar to those in the other action alternatives, however the boundaries of the reserves in VCU's 581, 582, and 583 have shifted west from the coastline to exclude the Transportation and Utility System land use designation.

Key Wildlife Habitats/Areas

In terms of selected key wildlife habitats or areas (see Table 2-6), Alternatives 2 and 5 show similar and consistently lower adverse effects than Alternatives 3, 4, and 6, which are also generally similar. Alternatives 3, 4, and 6 harvest more high-volume old growth and low-elevation old growth than do Alternatives 2 and 5. Alternatives 2, 4, and 6 have a smaller average unit size than Alternatives 3 and 5 (26/27/27 acres versus 34/36 acres), but Alternatives 4 and 6 have more than twice the number of units than does Alternative 2. Overall, Alternative 2 minimizes forest fragmentation in its combination of lower acres of

Table Summary-1
Comparison of Action Alternatives - Outputs, Objectives and Effects

Category	Units	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Harvest Method						
Two-aged Systems	acres	461	843	1,038	426	1,038
Harvest Volume*	MMBF**	7.9	14.2	16.9	6.6	16.9
Harvest Units						
Number of units	#	18	25	39	12	39
Average unit size	acres	26	34	27	36	27
Harvest System*						
Running skyline	MMBF	4.1	4.0	6.8	3.7	6.8
Other cable	MMBF	0.0	0.0	3.0	1.0	3.0
Helicopter	MMBF	3.3	9.9	6.3	1.5	6.3
Shovel	MMBF	0.5	0.3	0.9	0.4	0.9
Harvest of Key Habitats						
High-vol. old growth	acres	196	529	597	201	597
Old growth <1,200 ft.	acres	282	541	668	376	668
Luck Lake drainage	acres	359	596	617	263	617
Roads						
New construction	miles	3.9	2.3	12.3	4.3	12.3
Reconstruction	miles	3.6	4.9	10.1	3.7	10.1
In Baird Peak area	miles	0.7	0.0	2.6	0.0	2.6
Open road density	mi/sq. mi.	0.67	0.67	0.67	0.67	0.67
Timber Sales						
Number of sales (Max.)	#	8	15	18	7	18
Average sale size	MMBF	0.99	0.95	0.94	0.94	0.94
Smallest sale	MMBF	0.14	0.04	0.04	0.65	0.04
Economics						
Total Project Cost	millions	$2.3	$3.6	$5.7	$2.0	$5.7
Average harv/const cost	$/MBF	$286	$252	$337	$302	$337
Net Value***	$/MBF	235, -97	269, -63	184, -148	219, -113	184, -148
Harvest/mile of road	MMBF	1.1	2.0	0.8	0.8	0.8
Employment	jobs	42	75	89	35	89

* excluding right-of-way volume
** MMBF = million board feet
***range from high to low market prices

harvest in key habitats, and fewer, smaller units, but is not substantially different than Alternative 5, which has fewer but larger units and similar harvested acres in key habitats.

Old-growth Habitat Connectivity

Alternative 2 has the lowest average unit size and comes closest to matching natural disturbances. The combination of smaller unit size and fewer units for Alternative 2 would result in relatively better connectivity remaining after harvest than in the other action alternatives. Alternatives 4 and 6 have a slightly higher average unit size and contain more than twice the number of harvest units as Alternative 2. Alternatives 3 and 5 have higher average unit sizes. Alternative 5 has the fewest units overall, and based on number of units would create the least fragmentation.

Luck Lake Drainage

Timber harvest and proposed road construction vary for the action alternatives within the Luck Lake drainage. Alternatives 2 and 5 harvest the fewest acres within this drainage (359 and 263 acres), while Alternatives 3, 4, and 6 harvest the most (596, 617, and 617 acres). Alternatives 2 and 3 propose the fewest miles of road construction in this drainage (0.3 and 0.6 miles), while Alternatives 4, 5, and 6 propose the most (3.2, 1.1, and 3.2 miles). The floodplains of the Luck Lake drainage will not be affected, and riparian areas will be excluded from timber harvest under Forest Plan standards and guidelines. The Luck Lake drainage has the majority of the Project Area's high gradient contained streams, and blowdown could occur in up to 15 percent of the riparian areas of these streams adjacent to harvest units. Timber harvest on forested wetlands in the Luck Lake drainage is proposed for all action alternatives, as is road construction. Alternatives 5 and 2 have the fewest acres of wetland harvest (157 and 226 acres), compared with Alternatives 3, 4, and 6 (344, 364, and 364 acres). Alternatives 3 and 2 propose the least specified road construction on wetlands (0.0 and 0.5 miles), as compared with Alternatives 4, 5, and 6 (2.9, 0.8, and 2.9 miles). Overall, Alternative 5 has the fewest acres impacted by timber harvest and road building on wetlands.

Issue 2: Timber Sale Economics

The alternatives differ in the total amount of timber harvest and road construction proposed, with Alternatives 4 and 6 having the highest harvest (1,038 acres) and considerably more road construction (12.3 new road miles). Alternatives 2 and 5 are very similar in total harvest acres (461 and 426 acres), but Alternative 2 has less road construction (3.9 versus 4.3 miles). Alternative 3 has the third highest harvest (843 acres) and the fewest new road miles (2.3).

Alternative 3, which minimizes road construction, has the lowest average overall cost per MBF ($252), somewhat lower than Alternatives 2 and 5. Alternatives 4 and 6 have the highest average cost per MBF, which at $337 is substantially higher than the other three action alternatives. These costs are largely related to road construction, as can be seen in the "harvest/mile of road" column in the table. Although Alternative 3 has a higher project cost than Alternative 2 or 5, it achieves 2.0 MMBF of harvest for every mile of road construction and reconstruction, twice the amount of the other action alternatives. Alternative 3 has the potential for offering the most economic sales.

Alternative 1 proposes no timber harvest, and thus offers no opportunity for timber-related employment or personal income. The action alternatives would result in timber-related employment opportunities in direct proportion to their total harvest volumes. Alternatives 4 and 6 offer the most timber volume (16.9 MMBF) and generate the highest potential number of jobs (89). These amounts are somewhat more than Alternative 3 (14.2 MMBF and 75 jobs) but over twice the amounts of Alternatives 2 or 5.

Issue 3: Timber Sale Size and Complexity

Of the action alternatives, Alternative 5 harvests the least volume with helicopter logging systems (1.5 MMBF) and ranks third in the volume requiring “other” cable (generally long-span) logging systems (1.0 MMBF). It offers the most economic logging system opportunities in proportion to its total harvest volume, however this is partly offset by the need for more road construction than Alternatives 2 and 3. Alternatives 4 and 6 have the highest harvest volume using running skyline, but also considerably more road construction.

Alternatives 3, 4, and 6 have the higher numbers of individual sale opportunities (potentially divisible into 15, 18, and 18 sales), the smallest of which would be only about 40,000 board feet. Alternatives 3, 4, 5, and 6 have similar average sale sizes (averaging 0.9 MMBF), lower than Alternative 2 (averaging 1.0 MMBF). Alternatives 3, 4, and 6 thus have more flexibility to provide a greater number of very small sale offerings. As discussed under the previous issue, Alternative 3 minimizes road construction and has the lowest average harvest cost of the action alternatives, whereas Alternatives 4 and 6 have the highest average cost. Although it has the goal of providing less costly small sales, Alternative 5 has fewer options with only 7 potential sales, the smallest of which would be 650,000 board feet. Alternative 3 therefore presents the most opportunities for small, relatively economical sales.

Issue 4: New Road Construction

Alternative 3 has the lowest amount of new road construction (2.3 miles) and the least total construction and reconstruction (7.2 miles). Alternative 2 is comparable in overall road miles (7.5) but constructs 3.9 miles of new road. Alternative 3 thus opens the fewest areas with new road access. Alternative 5 proposes 4.3 miles of new road construction. Neither Alternatives 3 nor 5 build roads into the Baird Peak area. Alternatives 4 and 6, which have considerably more new road construction (12.3 miles) than the other alternatives, would also build 2.6 miles of road in the Baird Peak area. Alternative 2 builds 0.7 mile of road in that area.

Issue 5: Access Management

The potential long-term effects of the new road construction just discussed will be reduced through implementation of an access management plan for the Luck Lake Project Area. This plan differs by action alternative only to the extent that the alternatives build different amounts of new roads, and the plan will close all newly-constructed roads at the end of the project. The access management strategy is to address and reduce, through access restrictions, some of the currently existing effects on wildlife and wildlife habitats, fisheries, soils, and water quality, while leaving other roads open for public uses and future timber management. As the result of an evaluation of resource concerns and potential impacts, the access management plan proposes to close all newly constructed roads from the Luck Lake Project and another 22.8 miles of roads currently open. Another 28.2 miles of roads currently closed would remain so. When the access management plan is fully implemented, 37.3 miles of roads within the Project Area will remain open to public uses.

Alternative 1 leaves all existing roads in their current condition and does not propose any new access restrictions.

Open Road Density

The open road density within the Project Area is currently 1.08 miles of open, drivable road per square mile of land (miles/mile^2). This would remain unchanged under Alternative 1. Implementing the access management plan proposed for Alternatives 2, 3, 4, 5, and 6 would decrease the open road density to 0.67 miles/mile^2.

Chapter 1

Purpose and Need

Chapter 1

Purpose and Need

Introduction

In compliance with the National Environmental Policy Act (NEPA) and other relevant State and Federal laws and regulations, the Forest Service has prepared this Environmental Impact Statement (EIS) on the potential effects of timber harvest in the Luck Lake Project Area (see Figure 1-1). The Project Area is located on Prince of Wales Island, and is within the Thorne Bay Ranger District, Tongass National Forest, Alaska. This EIS discloses the direct, indirect, and cumulative environmental impacts and any irreversible or irretrievable commitment of resources that would result from the proposed action and alternatives.

This EIS is prepared according to the format established by Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1500-1508). Chapter 1, in addition to explaining the purpose and need for the proposed action, discusses how the Luck Lake Project relates to the modified 1997 Tongass Land and Resource Management Plan (Forest Plan), and identifies the significant issues driving the EIS analysis. Chapter 2 describes and compares the proposed action, alternatives to the proposed action, and a no-action alternative. Chapter 3 describes the natural and human environments potentially affected by the proposed action and alternatives, and discloses what the potential effects are anticipated to be. Chapter 4 contains the list of preparers, the EIS distribution list, literature cited, a glossary, and an index. Appendix A discusses the reasons for scheduling the Luck Lake Project environmental analysis now. Other appendices provide additional information on specific aspects of the proposed project. Additional documentation may be found in the project planning record located at the Thorne Bay Ranger District Office in Thorne Bay, Alaska.

The interdisciplinary team (IDT) used a systematic approach for analyzing the proposed project and alternatives to it, estimating the environmental effects, and preparing this EIS. The planning process complies with NEPA and the CEQ regulations. Planning was coordinated with the appropriate Federal, State, and local agencies, and local federally recognized tribes.

Proposed Action

A "proposed action" is defined early in the project-level planning process. This serves as a starting point for the IDT, and gives the public and other agencies specific information on which to focus comments. Using these comments (see discussion of Significant Issues later

in this chapter), and information from preliminary analysis, the Luck Lake IDT updated the original proposed action, then developed alternatives to the updated proposed action. The updated proposed action is described below and is reflected in Alternative 4 of this EIS. All alternatives are discussed in detail in Chapter 2.

The Forest Service proposes to harvest up to approximately 17 MMBF of timber from approximately 1,038 acres of National Forest System land through a series of timber sales beginning in 2000. This would require up to about 13 miles of new road construction and 10 miles of road reconstruction. Logs would be transported to existing log transfer or processing facilities. Timber would be sold from this project in multiple sales of varying sale sizes.

The project proposes timber harvesting on selected suitable forest lands for the production of sawtimber and other wood products, to help meet market demands for timber and provide resource production opportunities and employment for local communities. Harvest methods other than traditional clearcutting are proposed; harvest is expected to improve timber growth and contribute towards a balance of age classes. Three areas allocated to Old-growth Habitat as part of the forest-wide system of old-growth habitat reserves are included, and location and boundary changes for two of these are proposed for wildlife habitat considerations, resulting in a non-significant amendment to the Forest Plan. Finally, the proposal includes development of a transportation access management plan for the Project Area to guide current and future management of the road system.

Decision to Be Made

Based on the environmental study and analysis in this EIS, the Tongass Forest Supervisor will decide whether and how to make timber available from the Luck Lake Project Area in accordance with Forest Plan goals, objectives and desired future conditions.

This decision will include:

- the estimated acreage to be treated in this Project Area in multiple timber sales;
- the location and design of timber harvest units including reserve areas;
- the location and design of road systems;
- mitigation and monitoring requirements;
- whether there may be a significant restriction on subsistence use and if so, related findings and measures to minimize impacts on subsistence users;
- approval of a non-significant Forest Plan amendment adjusting the boundaries of three small old-growth reserves;
- Access Management Plan objectives, including restrictions for resource protection and a comprehensive road and culvert maintenance program based on road-condition surveys conducted in the Project Area.

Project Area

The 35,509-acre Luck Lake Project Area is located approximately 17 air miles north of Thorne Bay, Alaska (Figure 1-1). It encompasses an area of north central Prince of Wales Island that extends south from Coffman Cove to just north of Ratz Harbor. It is located in

Figure 1-1
Project Area Vicinity Map

the Chum Creek, Coffman Creek, and Luck Creek/Luck Lake/Eagle Creek watersheds. The community of Coffman Cove is located within and adjacent to the Project Area. Access to the area is by the Prince of Wales Island road system or by small plane originating in Ketchikan.

The Project Area includes value comparison units (VCU's) 572, 581, 582, and part of 583. VCU's are defined in the Introduction to Chapter 3. For analysis purposes, the Project Area boundaries are considered to be the same as the VCU boundaries, although these vary slightly along the western and southern boundaries of the Project Area. VCU boundaries generally follow major watershed divides. VCU's are delineated in Figure 1-2.

Purpose and Need

The Luck Lake Project is proposed at this time to implement the goals and objectives of the Forest Plan, and to help move the Project Area toward desired future conditions described in that plan. The Forest Plan includes forest-wide goals and objectives, and area-specific (land use designation) goals, objectives, and desired future conditions. Applicable forest-wide goals and objectives (Forest Plan, pp. 2-3 and 2-4) include:

1. Manage the timber resource for production of sawtimber and other wood products from suitable timber lands made available for timber harvest, on an even-flow, long-term sustained yield basis and in an economically efficient manner.

2. Seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber, and the market demand for the planning cycle.

3. Provide a diversity of opportunities for resource uses that contribute to the local and regional economies of Southeast Alaska.

4. Support a wide range of natural resource employment opportunities within Southeast Alaska's communities.

Goals, objectives and desired future conditions of the land use designations within the Project Area are described in the next section, "Relationship to the Forest Plan."

Preliminary analysis indicates as many as 1,038 acres and 16.9 million board feet of timber could be available for harvest from the Project Area at this time (see also Chapter 2, "Development of Alternatives"). Appendix A of this document provides information on how this project relates to the overall Tongass timber sale program, and why the project is being scheduled at this time.

Relationship to Forest Plan

National forest planning takes place at several levels: national, regional, forest, and project levels. The Luck Lake EIS is a project-level analysis; its scope is confined to issues concerning the effects of the project. It does not attempt to address decisions made at higher levels. It does, however, implement direction provided at those higher levels.

The Forest Plan embodies the provisions of the National Forest Management Act, its implementing regulations, and other guiding documents. The Forest Plan sets forth in detail the direction for managing the land and resources of the Tongass National Forest. The

Forest Plan is a result of extensive analysis, which is addressed in the Forest Plan FEIS. When appropriate, the Luck Lake EIS tiers to the Forest Plan FEIS, as encouraged by 40 CFR 1502.20. Also, this EIS will incorporate documented analyses by summarizing and citing them, rather than repeating the entire analysis.

The Forest Plan uses land use designations to guide management of the National Forest System lands within the Tongass. Each designation provides for a unique combination of activities, practices and uses. The Luck Lake Project Area includes five land use designations. The Semi-remote Recreation land use designation is now found within the Project Area, as a result of designation changes made in the 1999 Forest Plan Record of Decision. No activities are planned on this designation. Goals, objectives and desired future conditions of each are included or summarized below, and their locations are shown in Figure 1-2. The Forest Plan (Chapter 3) contains a detailed description of each land use designation.

Timber Production

The goals of this designation are to:

- maintain and promote industrial wood production from suitable timber lands, providing a continuous supply of wood to meet society's needs,
- manage these lands for sustained long-term timber yields,
- seek to provide a supply of timber from the Tongass National Forest which meets the annual and planning-cycle market demand, consistent with the standards and guidelines of this land use designation.

Timber management objectives of this land use designation include:

- seek to reduce clearcutting when other methods will meet land management objectives,
- improve timber growth and productivity on commercial forest lands, and
- plan, inventory, prepare, offer, sell, and administer timber sales and permits to ensure the orderly development of timber production.

For Timber Production, the desired future condition includes a sustained yield of timber, healthy tree stands in a balanced mix of age classes from young stands to trees of harvestable age, and a road system providing access for timber management as well as recreation, hunting and fishing, and other public uses. Recreation opportunities associated with roaded settings are available. Wildlife habitats are predominantly in the early and middle successional stages.

Modified Landscape

The goals of this designation repeat the first and third goals listed under Timber Production, and include two others:

- provide a sustained yield of timber and a mix of resource activities while minimizing the visibility of developments in the foreground distance zone,
- recognize the scenic values of suitable timber lands viewed from identified popular roads, trails, marine travel routes, recreation sites, bays, and anchorages, and ... modify timber harvest practices accordingly.

Timber management objectives of the Modified Landscape land use designation are the same as those included for Timber Production. The scenery objective is to apply the Partial Retention visual quality objective in the foreground distance zone, and Modification in the remaining zones, as seen from visual priority travel routes and use areas.

For Modified Landscape, the desired future condition accepts a somewhat modified landscape, but emphasizes scenic quality in foreground distance zones. Recreation opportunities associated with natural-appearing to modified settings are available. A variety of successional stages provide a range of wildlife habitat conditions.

Semi-remote Recreation

The goals of this designation are:

- provide predominantly natural or natural-appearing settings for semi-primitive types of recreation and tourism and for occasional enclaves of concentrated recreation and tourism activities.
- provide opportunities for a moderate degree of independence, closeness to nature, and self-reliance in environments requiring challenging motorized or non-motorized forms of transportation.

As only small slivers of Semi-remote recreation are located within the Project Area, applicable objectives of this designation are:

- apply the Partial retention Visual Quality Objective to any developments, facilities, or structures.
- fish enhancement and wildlife habitat improvement may occur.

For Semi-remote Recreation, the desired future condition is characterized by generally unmodified natural environments. Ecological processes and natural conditions are only minimally affected by past or current human uses or activities. Interactions between users are infrequent.

Old-growth Habitat

The goals of this designation are:

- maintain areas of old-growth forests and their associated natural ecological processes to provide habitat for old-growth associated resources,
- manage early seral conifer stands to achieve old-growth forest characteristic structure and composition based upon site capability.

Applicable objectives of Old-growth Habitat include:

- provide old-growth forest habitats, in combination with other land use designations, to maintain viable populations of ... fish and wildlife species ... that may be closely associated with old-growth forests,
- contribute to the habitat capability of fish and wildlife resources to support sustainable human subsistence and recreational uses,
- maintain components of flora and fauna biodiversity and ecological processes associated with old-growth forests.

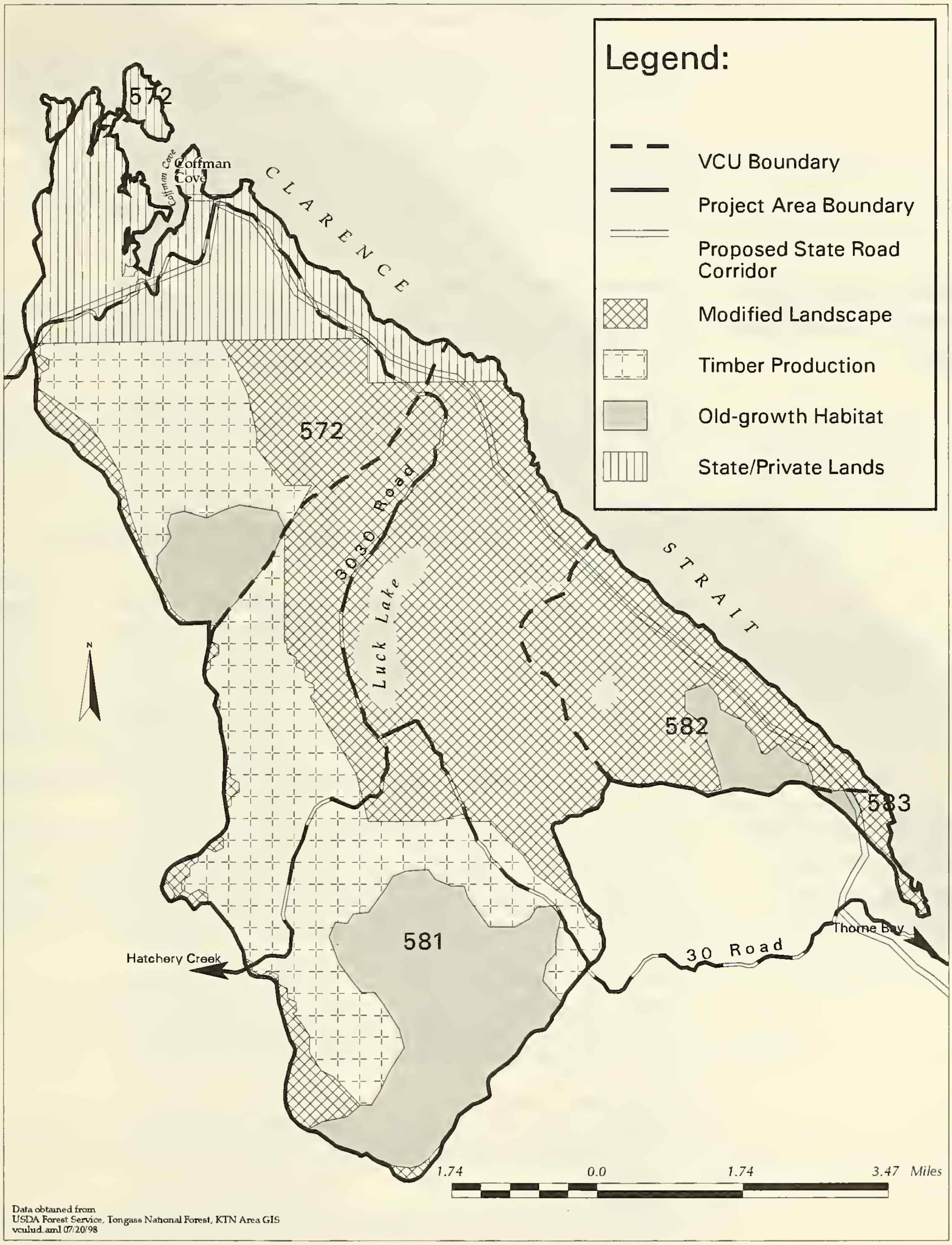
For Old-growth Habitat, the desired future condition is that all forested areas attain old-growth forest characteristics and provide a diversity of old-growth habitat types, associated species, and ecological processes.

Transportation and Utility System

The goal of this designation is:

- provide for, and/or facilitate the development of, existing and future major public Transportation and Utility Systems, including those identified by the State of Alaska and the Alaska Energy Authority.

Figure 1-2
Luck Lake Project Area Land Use Allocations (as identified in the Forest Plan)



The applicable objective of Transportation and Utility System is:

- during the period before actual construction of the new system occurs, the management prescription(s) of the (initial) Land Use Designation(s) underlying the corridors will remain applicable.

The state road corridor, proposed by the Forest Plan in the Transportation/Utility System land use designation, will not be analyzed as a part of the Luck Lake Project. This corridor may be proposed as a separate project in the future. All analysis and public involvement would take place under that future proposal. On Forest Plan maps, the Transportation/Utility System land use designation is identified as existing or proposed power transmission corridors or state road corridors. Following this example, we have identified the Transportation/Utility System land use designation as a Proposed State Road Corridor on Figure 1-2.

Other Land Status Within the Project Area

State and Private Lands

This is not a designation in the Forest Plan. However, for purposes of this EIS, it identifies lands within the Project Area that have been conveyed to the State or to Native corporations and are therefore not considered in the action alternatives of this project.

Table 1-1 gives the acreages within the Project Area of each land use designation, and of the State and private lands. Figure 1-2 displays the location of the land allocations and VCU's within the Project Area.

Table 1-1
Project Area Land Allocation Acreages (National Forest Acres)

Timber Production	Modified Landscape	Semi-remote Recreation*	Old-growth Habitat	T/U** System	State and Private Lands	Project Area Total**
9,212	15,768	166	5,290	156	5,073	35,509

* These lands are small slivers, located on the western boundary of the Project Area, and are not identified on Figure 1-2.
** T/U = Transportation/Utility (acres shown here are also accounted for in underlying land allocations)

Key Forest-wide Standards and Guidelines in Project Area

The following standards and guidelines delineate spatial areas not available for programmed timber harvest within land use designations that are otherwise available. Each applies to a specific habitat or ecological component. These areas are included within the Modified Landscape and Timber Production designations described above. More detailed information about these and other standards and guidelines is included in the Forest Plan, Chapter 4.

Beach and Estuary Fringe

The beach and estuary fringe is an area of approximately 1,000 feet inland from mean high tide around all marine coastlines. Programmed timber harvest is not allowed and no new roads are located within the beach and estuary fringe.

Karst and Caves

Potential karst areas have been identified and categorized as low, medium, or high vulnerability. High vulnerability areas are not suitable for programmed timber harvest.

Riparian

Riparian Management Areas are areas of special concern to fish, other aquatic resources, and wildlife. These areas are delineated according to the process group direction in the Riparian

forest-wide standards and guidelines (Forest Plan, pp. 4-56 to 4-73). Some riparian boundaries may be adjusted after completion of a project-specific watershed analysis (Forest Plan, p. 4-56 and Appendix J). Timber harvest is not scheduled in Riparian Management Areas.

Public Involvement

Scoping

The Council on Environmental Quality (CEQ) defines scoping as "...an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to a proposed action" (40 CFR 1501.7). The scoping process was used to invite public participation and collect initial comments. The public was invited to participate in the project in the following ways.

Notice of Intent (NOI)

A Notice of Intent was published in the *Federal Register* on July 24, 1997, when it was decided that an EIS was to be completed for the project.

Public Mailing

In August, 1997, a letter providing information and seeking public comment (scoping document) was mailed to approximately 408 individuals and groups that had previously shown interest in Forest Service projects in Southeast Alaska. The mailing included 12 Federal agencies, 15 State agencies and divisions, 34 Native and municipal offices, and 97 businesses and other organizations and groups, in addition to individual citizens. Approximately 40 responses to this initial mailing were received.

Local News Media

Announcements about the project were printed in the *Ketchikan Daily News* and *Island News*. A scoping document describing the project was placed in the August 9-10, 1997, weekend edition of the *Ketchikan Daily News* and in the August 11, 1997, edition of the *Island News*.

Public Meetings

Public meetings were held in Thorne Bay, Whale Pass, Coffman Cove, Naukati, and Klawock to provide information and discuss potential areas of concern and/or interest that should be addressed in the Luck Lake Project.

Draft EIS

Availability of Draft EIS for Public Comment

Availability of the Draft EIS was announced in the *Federal Register* on March 19, 1999 and through notices in local papers. The deadline for public comment was May 3, 1999. Documents were also mailed to Federal and State agencies, Native and municipal offices, and others who requested them.

Subsistence Hearings

Subsistence hearings on the Draft EIS were held at the following locations:

Stikine Inn, Wrangell	April 8, 1999
City Hall, Coffman Cove	April 12, 1999
Community Hall, Whale Pass	April 13, 1999
Bay Chalet, Thorne Bay	April 14, 1999
KPC Cookhouse, Naukati	April 15, 1999
ANB Hall, Klawock	April 16, 1999

Open houses and public meetings to describe the analysis process and answer public questions were held in conjunction with the subsistence hearings. Dates, times, and locations were publicized in the local media. Transcribed notes of all subsistence testimony are included in Appendix E.

Access Management Proposal Meetings

Public meetings to discuss and solicit public comment on the updated access management proposal were held at the following locations:

Ted Ferry Civic Center, Ketchikan	September 29, 1999
City Hall, Coffman Cove	November 3, 1999
City Hall, Thorne Bay	November 4, 1999

Dates, times, and locations of these meetings were publicized in the local media.

Analysis and Incorporation of Public Comment

The IDT analyzed and incorporated public comments and subsistence testimony into the Final EIS. Sixteen agencies, organizations, and individuals submitted written comments on the Luck Lake Draft EIS. Public comments, along with the Forest Service's responses, are listed in Appendix B.

Final EIS

Availability of this Final EIS was announced in the *Federal Register* and through notices in the local media. Documents were also mailed to Federal and State agencies, Native and municipal offices, and others who provided comments on this project or requested them.

Issues

Issues Associated with the Proposed Action

Significant issues for the Luck Lake Project were identified through public and internal scoping. Similar issues were combined into one statement where appropriate. The following five issues were determined to be significant and within the scope of the project decision. These issues are addressed through the proposed action and alternatives. Six additional concerns were considered but determined not to be significant for the project decisions to be made; they are either already resolved in the Forest Plan, or their resolution falls outside the scope of the Luck Lake Project.

Issue 1: High Value Wildlife and Fish Habitat

The Forest Plan includes a forest-wide network of old-growth habitat reserves, and detailed standards and guidelines specific to individual species and important habitat types. The application of some of this direction, as well as the need for additional measures, is left to project-specific analysis. This issue relates to maintaining the value and function of the following key local wildlife and fish habitats that support subsistence and related resources: 1) high value deer winter range, 2) old-growth habitat connectivity, and 3) cumulative effects within the Luck Creek/Luck Lake/Eagle Creek watershed or "Luck Lake drainage" due to the amount of previous harvest within that drainage and its high sport fish uses.

Issue 2: Timber Sale Economics

This issue relates to the economic viability of proposed timber sales, and the potential employment and revenues generated by the project.

Issue 3: Timber Sale Size and Complexity

This issue relates to the ability of smaller companies to compete for timber sales in the Project Area. Higher volume sales coupled with extensive road construction may be beyond

the means of smaller timber purchasers. Likewise, helicopter or large cable logging systems may also preclude all but the larger companies.

Issue 4: New Road Construction

This issue relates to construction of roads into areas available for timber management but currently unroaded. Of particular concern is the Ratz inventoried roadless area, also know as the Baird Peak area: whether or not any roads should be built there, and if any are built, their management after completion of timber harvest.

Issue 5: Access Management

This issue relates to how all of the existing and proposed roads will be managed upon completion of timber harvesting, in particular, if they are to be left open or closed to public use. Access management considerations include resource needs, the cost of road maintenance, proximity to communities, and recreation and other uses desired by the public.

Issues Outside the Scope of This Analysis

The following public concerns were considered but determined not to be significant issues. Some are already addressed through other processes or in the Forest Plan, or their resolution is beyond the scope of this project.

A: Include Log Transfer Facility Permitting Process in EIS

Timber from the project is expected to go to existing permitted facilities. Permit renewal, ongoing permit administration, and monitoring are part of the ongoing operation of the facility.

B: Manage Value Comparison Unit 581 as a Community Use Area

The idea of Community Use Areas, as proposed by the State of Alaska, was considered in the revision of the Forest Plan and its allocation of land use designations. Concerns specific to high value fish and wildlife habitats are included in Issue 1 above.

C: Additional Protection is Needed for Marten

The Forest Plan has incorporated a comprehensive conservation biology strategy to assure species distribution and viability. The Forest Plan adopted additional standards and guidelines for the marten, to be applied in VCU's where high levels of timber harvest have occurred (Forest Plan, pp. 4-118 to 4-119). This project meets or exceeds the Forest Plan requirements.

D: Construction of Beach Road Between Ratz Harbor and Coffman Cove

The construction of this road is not reasonably foreseeable. It is not a part of this proposed action and will not be analyzed with this project.

E: Do Not Use a Predetermined Harvest Volume

The "Purpose and Need" section of this chapter discusses volume relationships related to the project. CEQ requires an implementable proposed action, which would include a volume. Other alternatives represent different responses to the significant issues identified above. Harvest volumes of the alternatives are a result of responding in different ways to the purpose and need and the issues; the alternatives are not driven by the need for a specific amount of volume.

F: Poaching

Poaching is an ongoing law enforcement issue beyond the scope of the project EIS. Existing laws regulate poaching. Access management prescriptions and strategies developed for the project (Issue 5) will include consideration of poaching.

Federal and State Permits, Licenses, and Certifications

To proceed with timber harvest as addressed in this EIS, various permits must be obtained from Federal and State agencies. Administrative actions on these permits would be initiated after the EIS is filed with the Environmental Protection Agency (EPA). The agencies and their responsibilities are listed below.

State of Alaska, Department of Environmental Conservation

- Certification of compliance with Alaska Water Quality Standards (Section 401 Certification).
- Solid Waste Disposal Permit (Section 402 of the Clean Water Act).

State of Alaska, Department of Natural Resources

- Authorization for occupancy and use of tidelands and submerged lands.

U.S. Army Corps of Engineers

- Approval of discharge of dredged or fill material into waters of the United States (Section 404 of the Clean Water Act of 1977, as amended).
- Approval of construction of structures or work in navigable waters of the United States (Section 10 of the Rivers and Harbors Act of 1899).

U.S. Coast Guard

- Coast Guard Bridge Permit (in accordance with the General Bridge Act of 1946) required for all structures constructed across navigable waters of the U.S.

U.S. Environmental Protection Agency

- Storm water discharge permit.
- National Pollutant Discharge Elimination System review (Section 402 of the Clean Water Act).

Legislation and Executive Orders Related to This EIS

Shown below is a partial list of laws pertaining to project-specific planning and environmental analysis on Federal lands. Some of the laws are specific to Alaska, while others pertain to all Federal lands.

- Alaska Native Claims Settlement Act (ANCSA) of 1971
- Alaska National Interest Lands Conservation Act (ANILCA) of 1980
- American Indian Religious Freedom Act of 1978
- Archeological Resource Protection Act of 1980
- Cave Resource Protection Act of 1988
- Clean Air Act of 1970 (as amended)
- Clean Water Act of 1977 (as amended)
- Endangered Species Act (ESA) of 1973 (as amended)
- Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 (as amended)

- Magnuson-Stevens Fishery Conservation and Management Act of 1996
- Marine Mammal Protection Act of 1972
- Multiple-use Sustained Yield Act of 1960
- National Environmental Policy Act (NEPA) of 1969 (as amended)
- National Forest Management Act (NFMA) of 1976 (as amended)
- National Historic Preservation Act of 1966 (as amended)
- Tongass Timber Reform Act (TTRA) of 1990
- Wild and Scenic Rivers Act of 1968, amended 1986
- Executive Order 11593 (cultural)
- Executive Order 11988 (floodplains)
- Executive Order 11990 (wetlands)
- Executive Order 12898 (environmental justice)
- Executive Order 12962 (aquatic systems and recreational fisheries)

In addition, the Coastal Zone Management Act (CZMA) of 1976, as amended, pertains to the preparation of an EIS. Federal lands are not included in the definition of the coastal zone as prescribed in the CZMA. However, the act requires that when Federal agencies conduct activities or developments that affect the Coastal Zone, that the activities or development be consistent to the maximum extent practicable with the approved State Coastal Management Program. The Forest Service makes this determination.

The Alaska Coastal Management Plan incorporated the Alaska Forest Resources and Practices Act of 1979 standards and guidelines for timber harvesting and processing. The Forest Service standards and guidelines and mitigation measures described in Chapters 2 and 3 of this document meet or exceed State standards.

Availability of the Planning Record

An important consideration in preparation of this EIS has been the reduction of paperwork as specified in 40 CFR 1500.4. In general, the objective is to furnish enough site-specific information to demonstrate a reasoned consideration of the environmental impacts of the alternatives and how these impacts can be mitigated.

The planning record is available upon issuance of this EIS, and is located at the Thorne Bay Ranger District office in Thorne Bay, Alaska. Other reference documents such as the Forest Plan, the Tongass Timber Reform Act, the Resources Planning Act, and the Alaska Regional Guide are available at public libraries around the region as well as at the Supervisor's Offices in Ketchikan, Petersburg, and Sitka. The Forest Plan is also available on the Internet (http://www.fs.fed.us/r10/tongass/) and CD-ROM.

Chapter 2

Alternatives

Chapter 2

Alternatives

Introduction

This chapter describes and compares the alternatives considered by the Forest Service for the Luck Lake Project. It includes a discussion of how alternatives were developed, an overview of mitigation measures, monitoring and other features common to all alternatives, a description and map of each alternative considered in detail, and a comparison of these alternatives focusing on the significant issues. Chapter 2 is intended to present the alternatives in comparative form, sharply defining the issues and providing a clear basis for choice among options by the decision maker and the public (40 CFR 1502.14).

Some of the information in Chapter 2 is summarized from Chapter 3, "Affected Environment and Environmental Consequences." Chapter 3 summarizes the scientific basis for establishing baselines and measuring the potential environmental consequences of each of the alternatives. For a full understanding of the effects of the alternatives, readers will need to consult Chapter 3.

Landscape Analysis

The Luck Lake Project Area (35,509 acres) is included in the larger Ratz planning area that has been shown on the Tongass National Forest multi-year timber sale plans for the last several years. The Ratz planning area encompasses 121,800 acres. In order to synthesize the various resource conditions, objectives, and opportunities, an interdisciplinary team (IDT) conducted a landscape analysis of the Ratz planning area. The landscape analysis identified logical "treatment" areas (silvicultural treatment accomplished through timber harvesting), and ranked these for consideration for timber harvest and environmental analysis. The Luck Lake area was given the highest priority for timber harvest consideration because of the number of potential acres suitable for timber harvest at this time. The current and desired future conditions of the landscape (see discussion of Purpose and Need in Chapter 1) were factors in this ranking. The Ratz Position Statement documents the landscape analysis process and is part of the Luck Lake EIS planning record.

The unit pool for the Luck Lake Project was based on the suitable and available commercial forest lands represented in the modified 1997 Tongass Land and Resource Management Plan (Forest Plan). A pool of potential units was then selected that reflects how much timber the Luck Lake Project Area could potentially provide at this time given the parameters of the Forest Plan. This preliminary harvest unit pool included more than 1,000 acres in 44

potential units. Additional early analysis of this unit pool led to deferring or dropping several potential harvest units from further consideration for the Luck Lake Project. Some of these units could not be harvested without violating Forest Plan standards and guidelines, and some would require modifications to meet standards and guidelines that would make them uneconomical to harvest.

Based on short- and long-term landscape or resource objectives (see Chapter 1), the IDT assigned preliminary timber harvest prescriptions for each potential harvest unit. This unit pool and the roads needed to access the units were then evaluated in the field. This pool of units was also used for public scoping for the project, and was identified at that time as the proposed action. The proposed action for this EIS, as described in Chapter 1 and considered in detail as Alternative 4, has changed slightly from the one described during scoping as a result of the field analysis.

The IDT conducted field investigations to collect site-specific information relative to the issues and to verify resource information contained in the Geographic Information System (GIS) data library. Specific studies included silvicultural exams, goshawk surveys, stream class verification, soil surveys, and others. Potential harvest units were validated, modified, dropped and/or deferred based on findings of the field investigations. Modifications were based on meeting Forest Plan standards and guidelines; for instance, if an unknown stream or karst feature was discovered. Some units were adjusted to have more logical boundaries, and some expanded to prevent isolating timber stands from future harvest. The emphasis of the project on two-aged and uneven-aged harvest systems required adjusting many units, originally designed for even-aged clearcutting, to facilitate logging systems. This effort led to the current unit pool, 1,038 acres and 39 units, which is the basis for Alternative 4. All unit harvest prescriptions have been updated to reflect Forest Plan standard and guidelines, field investigations and IDT analysis, and to respond to public and interagency input. Potential harvest unit cards and related road cards were included as Appendices B and C of the Draft EIS and in Appendices 2 and 3 of the ROD for the Selected Alternative.

Changes between Draft EIS and Final EIS

New Information

Additional site-specific information about the Luck Lake Project Area has become available since the publication of the Draft EIS. In addition, the 1999 Forest Plan Record of Decision provides some new direction affecting the Luck Lake Project. Sources and types of new information include:

- Supplemental field assessment of karst resources in 3 proposed harvest units.
- Additional northern goshawk surveys at six locations in the Project Area.
- Additional road, stream, and unit reconnaissance.
- 1999 Forest Plan Record of Decision and supporting documents. All National Forest System lands within the Luck Lake Project Area will now be managed on a 200-year rotation.
- New information incorporated into GIS for the Luck Lake Project Area.
- Removal of the Choris bog orchid (*Platanthera chorisana*) from the Sensitive Species List by the Regional Forester on May 11, 1999.
- Removal of the American peregrine falcon (*Falco peregrinus anatum*) from the Threatened Species List by the U.S. Fish and Wildlife Service on August 25, 1999.

Public Input

Public input on the Draft EIS included:

- ANILCA subsistence hearing testimony
- Written comment letters
- Information recorded at access management meetings and interagency meetings
- Appendix B, Public Comment and Responses and ANILCA Subsistence Hearing Testimony has been added to the Final EIS. Public comment on the Draft EIS led to revision and clarifications of sections in the Final EIS, described below.

Improved Analysis

New information and public input are reflected in revisions to text and tables in many sections of the Final EIS. The major revisions are described below by resource area. Revisions to unit and road cards for the Selected Alternative are shown in the Record of Decision, Appendices 2 and 3. A list of mitigation measures is included at the beginning of each appendix (Tables A2-1 and A3-1).

In some cases, new information caused a change to unit or alternative design that lessened environmental effects. Environmental consequences were not reanalyzed for resources with lessened impacts as a result of these changes. Examples of this type of change include: the prescription in the southeast portion of unit 581-423 was updated to retain more stand structure and the logging system was changed from conventional to helicopter yarding to meet visual quality objectives (VQO's); the proposed road accessing this setting (3030119) was dropped from all alternatives.

Biodiversity and Old Growth

Updated information in tables.

Strengthened discussion of the environmental effects in Chapter 3.

Fisheries

Updated GIS layers, text, and unit and road cards with information from field and road condition surveys.

Strengthened discussions of current condition and environmental effects in Chapter 3.

Updated fisheries resource report to include updated stream and road information, and added discussion of cumulative effects.

Karst Resources and Geology

Strengthened discussions of Project Area karst inventory, environmental effects, and mitigation in Chapter 3.

Recreation

Strengthened discussion of cumulative effects in Chapter 3.

Scenery

Strengthened discussion of cumulative effects in Chapter 3.

Included information on Recreation Opportunity Spectrum and the Thorne River roadless area.

Silviculture and Timber

Strengthened discussions of current condition and environmental effects in Chapter 3.

Clarified prescriptions on unit cards.

Revised the financial efficiency analysis, incorporating updated Forest Service Handbook direction, unit, and road information.

Revised Appendix A to include latest demand and supply information.

Soils

Amended Soil, Floodplain, Riparian and Wetlands Resources Report to strengthen cumulative effects analysis and rationale for harvesting on slopes over 72 percent.

Strengthened discussion of cumulative effects in Chapter 3.

Updated and completed physical description section of unit cards.

Subsistence

Strengthened discussion of environmental effects in Chapter 3.

Accounted for Coffman Cove's new Alaska State Ferry terminal in competition analysis.

Revised ANILCA finding, concluding that there is a significant possibility of a significant restriction to subsistence resources.

Threatened and Endangered Species

Strengthened discussion of environmental effects in Chapter 3.

Transportation

Revised access management plan and updated discussion in Chapter 3.

Included access management maps in Chapter 2.

Strengthened discussion of log transfer facilities in Chapter 3.

Strengthened discussions of current condition and environmental effects in Chapter 3.

Water

Included updated road and unit information in environmental effects discussion in Chapter 3.

Amended Watershed Analysis; included escapement data and made clerical edits.

Included a more thorough discussion of the Watershed Analysis findings in Chapter 3.

Strengthened discussion of cumulative effects in Chapter 3.

Wildlife

Strengthened discussions of current condition and environmental effects in Chapter 3.

Displayed deer habitat capability without wolf predation.

Analyzed habitat capability model for black bear; presented findings in response to comments (Appendix B, Response DGC-3).

Development of Alternatives

The proposed action and each action alternative presented in this EIS provide a different response to the significant issues for the Luck Lake Project while still meeting the stated purpose and need (see Chapter 1). Each of these alternatives represents a site-specific proposal developed through intensive IDT evaluation of timber harvest unit and road design, based on field verification. Unit identification and design also made use of high-resolution topographic maps and aerial photos, and a large quantity of resource data available in geographic information system (GIS) format.

The IDT used information from the analysis of scoping comments, in conjunction with the field-verified pool of units for the Project Area, to formulate different alternative approaches (frameworks). Based on these frameworks, the IDT then assigned potential harvest units to each to create the various alternatives. For example, if a project issue was concern over the high cost of timber harvest operations, then an alternative that minimizes transportation costs by selecting units already accessed by roads might be developed. Preliminary analysis and management direction were used to further refine the alternatives described here for the Luck Lake Project.

As has been discussed, a number of individual potential units have been eliminated from consideration at this time. Other units have been deferred because of resource or economic concerns.

Items Common to All Alternatives

The Forest Service uses many mitigation and preventive measures in the planning and implementation of land management activities. The application of these measures begins during the planning and design phases of a project. These measures come from or link to the Forest Plan, and continue through all phases of subsequent forest management related to the project. Higher-level direction is also contained in the Alaska (Forest Service Region 10) Regional Guide, and applicable Forest Service manuals and handbooks.

IDT specialists use on-the-ground inventories, computer inventories, and aerial photographs to prepare the documents called unit cards for each harvest unit in the unit pool for the alternatives. Cards are also prepared for each segment of road. Resource specialists include their concerns on the cards and then describe how the concerns can be addressed in the design of each unit and road segment. Resource concerns and mitigation measures will be refined further during final layout, when specialists have one more opportunity to revise their unit and road card recommendations.

Timber volumes used throughout the document are expressed in thousands of board feet (MBF's). The regional averages used to convert volumes from MBF's to hundreds of cubic feet (CCF's) follow:

Alaska yellowcedar and western redcedar, CCF = MBF/0.45.

Hemlock, CCF = MBF/0.50.

Sitka spruce, CCF = MBF/0.57.

Applicable Forest Plan standards and guidelines, Best Management Practices (BMP's), and other specific mitigation measures are identified on the harvest unit and road cards for the project (located in Appendices B and C of the Draft EIS and Appendices 2 and 3 of the ROD for the Selected Alternative). The following items are listed to highlight some of the key mitigation measures, findings, or processes applied to the project that are common to all alternatives; they are by no means a complete list. All alternatives have been analyzed for cumulative effects. This analysis includes National Forest System lands, as well as adjoining State and private lands where applicable.

Standards and Guidelines

Biodiversity and Old Growth

Each alternative complies with the Forest Plan conservation biology strategy designed to ensure well-distributed, viable populations of wildlife.

The small old-growth habitat reserves (Old-growth Habitat Land Use Designation) mapped in the Forest Plan FEIS have been evaluated for size, spacing, and habitat composition. The boundaries of one small old-growth habitat reserve, and the boundaries and location of another, have been evaluated with interagency involvement and adjustments have been proposed to include more high-value winter habitat for deer (lower-elevation old-growth forest). Two adjustment scenarios have been proposed. Alternatives 2, 3, 4, and 5 include one scenario, while Alternative 6 includes the other.

Fish and Marine Habitats

Forest Plan standards and guidelines for riparian areas apply to all lakes and streams within the Project Area.

Watershed analysis for the project included landscape, watershed, and site-level considerations. No opportunities were identified for adjusting Riparian Management Area boundaries.

Road cards show which streams are likely to need special attention during implementation, such as the use of timing restrictions for in-stream activities, larger culverts, or bridges (Appendix C of the Draft EIS and Appendix 3 of the Record of Decision (ROD) for the Selected Alternative).

No new log transfer facilities will be required to implement this project. The log transfer facility (LTF) sites at Tolstoi, Klawock, Whale Pass, Naukati, and Winter Harbor could be available to implement any of the Luck Lake Project timber sales. Additionally, we expect that some logs will be transported to processing facilities on Prince of Wales Island and will not need to use LTF's.

Karst Resources

All activities have been designed to avoid high vulnerability karst, and to meet Forest Plan standards and guidelines for low and moderate vulnerability areas.

Heritage Resources

Forest Plan standards and guidelines for heritage resources state that the preferred management of sites listed in, nominated to, or eligible for the National Register of Historic Places is avoidance and protection (p. 4-15). Evaluation of the data collection needs and survey strategy is described a 1995 Agreement between the Forest Service Alaska Region, Alaska State Historic Preservation Office (SHPO), and the Advisory Council on Historic Preservation (#95MOU-10-029). This agreement modifies the standard procedures described in Section 106 of the National Historic Preservation Act, 1966.

The Luck Lake Project Area lies entirely within the Central Prince of Wales (CPOW) Project Area, analyzed in 1992 and 1993. The reports documenting archaeological survey for CPOW state that at least 1,042 acres of proposed harvest and units were surveyed within VCU's 572, 573, and 581 prior to 1991. An additional 566 acres were surveyed during the CPOW planning process. These surveys resulted in the documentation of two modern/historic traplines consisting of alignments of blazed trees. No significant historic properties were discovered. (USDA FS CRM Reports 1993-05-01; 1993-05-01-09).

All planned management activities in the Luck Lake Project Area fall in low sensitivity areas for cultural resources as defined in the 1995 agreement (#95MOU-10-029): they lie at

elevations above 100 feet and do not possess other characteristics which would suggest focused historic or prehistoric activities. The possibility that significant historic properties exist within the Area of Potential Effects for this project is very low. The Luck Lake Project Area was cleared under CRM Report #1998-05-022. SHPO concurrence was effective in February 1999. Following harvest, a sample of roads and units will be monitored to test the assumptions of the sensitivity model.

Scenery

All units within the viewshed of a priority travel route or use area, as identified in the Forest Plan, have been designed to meet the visual quality objectives of the Modified Landscape Land Use Designation.

Soils, Water Quality, and Wetlands

All proposed activities upstream of Coffman Cove's water source have been designed to maintain State of Alaska Drinking Water Regulations and Water Quality Standards for water supply.

Potential harvest units with slopes greater than 72 percent have received an on-site analysis of slope and Class IV channel stability, and an assessment of potential downstream effects. Only areas with low levels of risk are included in the unit pool.

Road locations avoid slopes greater than 67 percent, unstable areas, and slide-prone areas where it is feasible to do so.

All roads have been located and will be designed to avoid or minimize effects on wetlands.

Subsistence

All alternatives have been evaluated in compliance with ANILCA, Title VIII, Section 810.

Timber Harvesting

Alternatives to traditional clearcutting are prescribed for all harvest units. Types of harvest include two-aged systems.

Risks from windthrow have been evaluated, and methods to minimize windthrow are incorporated into all harvest unit prescriptions.

Wildlife Habitat

The Forest Plan conservation biology strategy, including all species-specific standards and guidelines, sufficiently maintains habitat for viable populations for all species potentially within the Project Area.

Proposed harvest units in VCU's 572 and 581 will meet the Forest Plan standards and guidelines for goshawks and marten including leaving an average of 30 percent canopy closure within units.

Proposed harvest units in VCU 582 with high-value marten habitat are designed to meet Forest Plan standards and guidelines for marten by leaving 10-20 percent existing stand structure within units.

Monitoring

Monitoring activities can be divided into Forest Plan monitoring and project-specific monitoring. The National Forest Management Act requires that National Forests monitor and evaluate their forest plans (36 CFR 219.11). The Forest Plan (Chapter 6) includes the monitoring and evaluation activities to be conducted as part of Forest Plan implementation. The three categories of Forest Plan monitoring include:

> **Implementation monitoring.** Used to determine if the goals, objectives, standards and guidelines, and practices of the Forest Plan are implemented in accordance with the Forest Plan.
>
> **Effectiveness monitoring.** Used to determine if the Forest Plan standards and guidelines, and practices, as designed and implemented are effective in accomplishing the desired result.
>
> **Validation monitoring.** Used to determine whether the data, assumptions, and estimated effects used in developing the Forest Plan are correct.

Effectiveness and validation monitoring are not typically done as part of project implementation. Implementation monitoring, and any additional project-specific monitoring, are however important aspects of the project.

Routine Implementation Monitoring

Routine implementation monitoring assesses whether the project was implemented as designed and whether or not it complies with the Forest Plan. Planning for routine implementation monitoring began with the preliminary design of harvest units and roads (see previous discussion of mitigation). The unit and road cards (Appendices B and C of the Draft EIS and Appendices 2 and 3 of the ROD for the Selected Alternative) will be the basis for determining whether recommendations were implemented for various aspects of the Luck Lake Project.

Routine implementation monitoring is part of the administration of a timber sale contract. The sale administrators and road inspectors ensure that both the prescriptions contained on the unit and road cards and the unit silvicultural prescriptions are incorporated into contract documents; they then monitor performance relative to contract requirements. Input by resource staff specialists, such as fisheries biologists, soil scientists, hydrologists, and engineers, is regularly requested during this implementation monitoring process. These specialists provide technical advice when questions arise during project implementation.

Tongass staff annually conducts a review of BMP implementation and effectiveness. The results of this and other monitoring are summarized in Tongass National Forest Annual Monitoring and Evaluation Reports. This report provides information about how well the management direction of the Forest is being carried out, and measures the accomplishment of anticipated outputs, activities and effects.

Project-specific Effectiveness Monitoring

Effectiveness monitoring determines how well design features or mitigation measures work to protect natural resources and their beneficial uses. The responsible staff will keep monitoring records.

Post-Construction Road Monitoring

Objective: Evaluate the sensitivity model currently being used to design archaeological survey coverage (USDA FS Agreement #95MOU-10-029) for projects in the Alaska Region by post-construction archaeological monitoring of a small percentage (less than 20 percent) of roads.

Desired Results: At present the road corridors in low sensitivity zones have been cleared on the basis of a review of existing literature and an examination of the results of past archaeological survey projects. We expect monitoring of a sample of the roads constructed for the Luck Lake Project will not reveal any exposed historic or archaeological properties. However, should significant properties be discovered during monitoring, appropriate mitigation measures will be implemented and the sensitivity zone model will be reevaluated.

Measurement: Monitoring will be accomplished by walking the newly constructed road corridor and examining cutbanks and areas of disturbance. Any historic or archaeological materials (artifacts, features, or sites) discovered will be evaluated according to provisions of the National Historic Preservation Act applying National Register of Historic Places criteria of eligibility. Eligible and potentially eligible sites will receive mitigative treatment (data salvage and recovery). Discovery of any historic or prehistoric cultural resources will be cause for reevaluation of the sensitivity zone model and its application.

Responsible Staff: Craig and Thorne Bay Zone Archaeologist

Record of Results: The results of post-construction archaeological road monitoring will be reported in the Ketchikan Area's annual monitoring report and in the annual report to the Alaska SHPO.

Alternatives Considered but Eliminated from Detailed Study

The following alternative was considered during the planning process, but has not been included in the EIS for detailed study.

The Forest Service considered an alternative that would include no harvest or roadbuilding activities within the Luck Lake drainage. The emphasis of this alternative was to avoid impacts to the high-value fish habitat within the Luck Lake drainage. Implementation of Forest Plan standards and guidelines and BMP's mitigated impacts in most units and proposed road construction. The Luck Lake Watershed Analysis identified additional units and proposed roads with a high risk of producing sediment into streams within the Luck Lake drainage. Unit allocation in one or more alternatives provided the opportunity to avoid harvesting these units and constructing these roads.

Alternatives Considered in Detail

The Council on Environmental Quality (CEQ) regulations (40 CFR 1502.10(e)) state that EIS's shall consider "alternatives including the proposed action". Alternative 4 reflects the Luck Lake project's proposed action, as identified on page 1-1. Five alternatives to the proposed action are also considered. Alternative 1 is the no-action alternative, under which the Project Area would have no timber harvest or road construction at this time, and would remain subject to natural changes only. Alternatives 2, 3, 5 and 6 represent different means of satisfying the purpose and need than the proposed action, by responding with different emphases to the significant issues discussed in Chapter 1. 40 CFR 1502.14(e) directs agencies to identify the preferred alternative or alternatives, if one or more exists. Alternative 3, the Forest Service Preferred Alternative in the Draft EIS, fulfilled this regulation. Please note that the preferred alternative and the proposed action can be, and often are, different alternatives. Foldout color maps of all alternatives considered in detail are provided at the end of Chapter 2. Larger-scale maps of the alternatives are contained in the project planning record.

Alternative 1 (No-action)

The emphasis of this alternative is to propose no new timber harvest or road construction from the Luck Lake Project Area at this time. It does not preclude timber harvest from other areas at this time, or from the Luck Lake Project Area at some time in the future. The three old-growth habitat reserves within the Project Area would remain in their current locations, as mapped in the Forest Plan. This alternative provides limited opportunities to implement the access management plan, which is beneficial to many resources. The CEQ regulations (40 CFR 1502.14d) require that a "No Action" alternative be analyzed in every EIS. This alternative represents the existing condition against which all other alternatives are compared. The Alternative 1 (Existing Condition) map at the end of this chapter shows the distribution of vegetation associated with no new timber harvest.

Alternative 2

The emphasis of this alternative is to move the Project Area toward the Forest Plan's desired future conditions by minimizing potential effects to areas of key wildlife and fish habitat not already covered by Forest Plan direction. Harvest and road construction in high value deer winter range and identified wildlife travel corridors is avoided or minimized. In the Luck Lake drainage, activities with potential to adversely affect downstream sport fish resources are avoided. All figures listed below are approximate.

Alternative 2 would harvest 461 acres of commercial forest land in 18 harvest units producing 7.9 million board feet (MMBF) of timber. New road construction totals 3.9 miles.

Alternative 2 proposes harvest of 196 acres of high-volume productive old growth, and 282 acres of old-growth forest under 1,200 feet elevation. 79 acres of harvest are proposed on lands under 800 feet elevation, where key deer winter range (high volume, low elevation, south-facing slopes) is found. The average size of harvest units is 26 acres. In the Luck Lake drainage (VCU 581), 6.8 MMBF of timber harvest would occur on 359 acres.

Alternative 2 could be divided into as many as 8 timber sales, with an average size of 0.99 MMBF. The smallest offering would be 144,000 board feet. Average harvest/construction costs would be $286 per thousand board feet. Of this alternative's total harvest, 4.1 MMBF use less expensive running skyline harvest systems. On average, Alternative 2 harvests 1.1 MMBF for every mile of new and reconstructed road.

About 0.7 mile of road would be constructed in the Baird Peak area. After harvest activities are completed, all new project roads would be closed under the Luck Lake Access Management Plan.

Table 2-1
Alternative 2 - Harvest Objectives and Practices

Category	Unit or Measure	Amount
Harvest Method		
Two-aged Systems	acres	461
Harvest Volume*	MMBF**	7.9
Harvest System*		
Running skyline	MMBF	4.1
Other Cable	MMBF	0.0
Helicopter	MMBF	3.3
Shovel	MMBF	0.5
Roads		
New construction	miles	3.9
Reconstruction	miles	3.6
Economics		
Total Project Cost	millions	$2.3
Average harvest/construction cost	$/MBF	286
Net Stumpage Value***	$/MBF	235 to -97
Employment	jobs	42

* excluding incidental right-of-way volume
** MMBF = million board feet
***range from high to low market prices

Alternative 3 (Preferred in the Draft EIS)

The emphasis of this alternative is to move the Project Area toward the Forest Plan's desired future conditions by harvesting the most timber while minimizing new road construction and meeting all Forest Plan direction. Units are included that can be: 1) helicopter-logged to existing or reconstructed roads, 2) cable-logged to existing roads, and 3) cable-logged to short or temporary new roads. All figures listed below are approximate.

Alternative 3 would harvest 843 acres of commercial forest land in 25 harvest units producing 14.2 million board feet (MMBF) of timber. New road construction totals 2.3 miles.

Alternative 3 proposes harvest of 529 acres of high-volume productive old growth, and 541 acres of old-growth forest under 1200 feet elevation. The average unit size is 34 acres. In the Luck Lake drainage (VCU 581), 10.9 MMBF of timber harvest would occur on 596 acres.

Alternative 3 could be divided into as many as 15 timber sales, with an average size of 0.95 MMBF. The smallest offering would be 40,000 board feet. Average harvest/construction costs would be $252 per thousand board feet. Of this alternative's total harvest, 4.0 MMBF use less expensive running skyline harvest systems. On average, Alternative 3 harvests 2.0 MMBF for every mile of new and reconstructed road.

No roads would be constructed in the Baird Peak area. After harvest activities are completed, all new project roads would be closed under the Luck Lake Access Management Plan.

Table 2-2
Alternative 3 - Harvest Objectives and Practices

Category	Unit or Measure	Amount
Harvest Method		
Two-aged Systems	acres	843
Harvest Volume*	MMBF**	14.2
Harvest System*		
Running skyline	MMBF	4.0
Other Cable	MMBF	0.0
Helicopter	MMBF	9.9
Shovel	MMBF	0.3
Roads		
New construction	miles	2.3
Reconstruction	miles	4.9
Economics		
Total Project Cost	millions	$3.6
Average harvest cost	$/MBF	252
Net Stumpage Value***	$/MBF	269 to -63
Employment	jobs	75

* excluding incidental right-of-way volume
** MMBF = million board feet
*** range from high to low market prices

Alternative 4

The emphasis of this alternative, the project proposed action, is to move the Project Area toward the Forest Plan's desired future conditions by making available the most timber volume that is feasible to harvest at this time while meeting all Forest Plan direction. The emphasis is to maximize the contribution of the Luck Lake Project Area to the timber products industry, and industry-related employment and income. All figures listed below are approximate.

Alternative 4 would harvest 1,038 acres of commercial forest land in 39 harvest units producing 16.9 million board feet (MMBF) of timber. New road construction totals 12.3 miles.

Alternative 4 proposes harvest of 597 acres of high-volume productive old growth, and 668 acres of old-growth forest under 1,200 feet elevation. The average unit size is 27 acres. In the Luck Lake drainage (VCU 581), 11.1 MMBF of timber harvest would occur on 617 acres.

Alternative 4 could be divided into as many as 18 timber sales, with an average size of 0.94 MMBF. The smallest offering would be 42,000 board feet. Average harvest/construction costs would be $337 per thousand board feet. Of this alternative's total harvest, 6.8 MMBF use less expensive running skyline harvest systems. On average, Alternative 4 harvests 0.8 MMBF for every mile of new and reconstructed road.

About 2.6 miles of road would be constructed in the Baird Peak area. After harvest activities are completed, all new project roads would be closed under the Luck Lake Access Management Plan.

Table 2-3
Alternative 4 - Harvest Objectives and Practices

Category	Unit or Measure	Amount
Harvest Method		
Two-aged Systems	acres	1,038
Harvest Volume*	MMBF**	16.9
Harvest System*		
Running skyline	MMBF	6.8
Other Cable	MMBF	3.0
Helicopter	MMBF	6.3
Shovel	MMBF	0.9
Roads		
New construction	miles	12.3
Reconstruction	miles	10.1
Economics		
Total Project Cost	millions	$5.7
Average harvest/construction cost	$/MBF	337
Net Stumpage Value***	$/MBF	184 to -148
Employment	jobs	89

* excluding incidental right-of-way volume
** MMBF = million board feet
***range from high to low market prices

Alternative 5

The emphasis of this alternative is to move the Project Area toward the Forest Plan's desired future conditions by providing economically efficient timber harvesting, maximizing opportunities for less costly small sales, and meeting all Forest Plan direction. Harvest of low-volume or low-value units is limited, as are investments in road access. The selection of logging systems is based primarily on economics. All figures listed below are approximate.

Alternative 5 would harvest 426 acres of commercial forest land in 12 harvest units producing 6.6 million board feet (MMBF) of timber. New road construction totals 4.3 miles.

Alternative 5 proposes harvest of 201 acres of high-volume productive old growth, and 376 acres of old-growth forest under 1,200 feet elevation. The average unit size is 36 acres. In the Luck Lake drainage (VCU 581), 4.7 MMBF of timber harvest would occur on 263 acres.

Alternative 5 could be divided into as many as 7 timber sales, with an average size of 0.94 MMBF. The smallest offering would be 650,000 board feet. Average harvest/construction costs would be $302 per thousand board feet. Of this alternative's total harvest, 3.7 MMBF use less expensive running skyline harvest systems. On average, Alternative 5 harvests 0.8 MMBF for every mile of new and reconstructed road.

No roads would be constructed in the Baird Peak area. After harvest activities are completed, all new project roads would be closed under the Luck Lake Access Management Plan.

Table 2-4
Alternative 5 - Harvest Objectives and Practices

Category	Unit or Measure	Amount
Harvest Method		
Two-aged Systems	acres	426
Harvest Volume*	MMBF**	6.6
Harvest System*		
Running skyline	MMBF	3.7
Other Cable	MMBF	1.0
Helicopter	MMBF	1.5
Shovel	MMBF	0.4
Roads		
New construction	miles	4.3
Reconstruction	miles	3.7
Economics		
Total Project Cost	millions	$2.0
Average harvest/construction cost	$/MBF	302
Net Stumpage Value***	$/MBF	219 to -113
Employment	jobs	35

* excluding incidental right-of-way volume
** MMBF = million board feet
***range from high to low market prices

Alternative 6

The emphasis of this alternative is to move the Project Area toward the Forest Plan's desired future conditions by making available the most timber volume that is feasible to harvest at this time while meeting all Forest Plan direction. The emphasis is to maximize the contribution of the Luck Lake Project Area to the timber products industry, and industry-related employment and income. This alternative is identical to Alternative 4 with the exception that the old-growth habitat reserves located between Little Ratz Harbor and Coffman Cove do not cross the Transportation/Utility System corridor that connects Little Ratz and Coffman Cove. All figures listed below are approximate.

Alternative 6 would harvest 1,038 acres of commercial forest land in 39 harvest units producing 16.9 million board feet (MMBF) of timber. New road construction totals 12.3 miles.

Alternative 6 proposes harvest of 597 acres of high-volume productive old growth, and 668 acres of old-growth forest under 1,200 feet elevation. The average unit size is 27 acres. In the Luck Lake drainage (VCU 581), 11.1 MMBF of timber harvest would occur on 617 acres.

Alternative 6 could be divided into as many as 18 timber sales, with an average size of 0.94 MMBF. The smallest offering would be 42,000 board feet. Average harvest/construction costs would be $337 per thousand board feet. Of this alternative's total harvest, 6.8 MMBF use less expensive running skyline harvest systems. On average, Alternative 6 harvests 0.8 MMBF for every mile of new and reconstructed road.

About 2.6 miles of road would be constructed in the Baird Peak area. After harvest activities are completed, all new project roads would be closed under the Luck Lake Access Management Plan.

Table 2-5
Alternative 6 - Harvest Objectives and Practices

Category	Unit or Measure	Amount
Harvest Method		
Two-aged Systems	acres	1,038
Harvest Volume*	MMBF**	16.9
Harvest System*		
Running skyline	MMBF	6.8
Other Cable	MMBF	3.0
Helicopter	MMBF	6.3
Shovel	MMBF	0.9
Roads		
New construction	miles	12.3
Reconstruction	miles	10.1
Economics		
Total Project Cost	millions	$5.7
Average harvest cost	$/MBF	337
Net Stumpage Value***	$/MBF	184 to -148
Employment	jobs	89

* excluding incidental right-of-way volume
** MMBF = million board feet
***range from high to low market prices

Comparison of Alternatives

This section compares outputs, objectives and effects of the alternatives in terms of the significant issues for the Luck Lake Project. The discussions of effects are summarized from Chapter 3; for a full understanding of the effects, Chapter 3 should also be read. The table below provides an overview comparison of information from the alternative descriptions. This information will be used in the discussions that follow. The table does not include Alternative 1, which has no outputs or activities.

Table 2-6
Comparison of Action Alternatives - Outputs, Objectives and Effects

Category	Units	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Harvest Method						
Two-aged Systems	acres	461	843	1,038	426	1,038
Harvest Volume*	MMBF**	7.9	14.2	16.9	6.6	16.9
Harvest Units						
Number of units	#	18	25	39	12	39
Average unit size	acres	26	34	27	36	27
Harvest System*						
Running skyline	MMBF	4.1	4.0	6.8	3.7	6.8
Other cable	MMBF	0.0	0.0	3.0	1.0	3.0
Helicopter	MMBF	3.3	9.9	6.3	1.5	6.3
Shovel	MMBF	0.5	0.3	0.9	0.4	0.9
Harvest of Key Habitats						
High-vol. old growth	acres	196	529	597	201	597
Old growth <1,200 ft.	acres	282	541	668	376	668
Luck Lake drainage	acres	359	596	617	263	617
Roads						
New construction	miles	3.9	2.3	12.3	4.3	12.3
Reconstruction	miles	3.6	4.9	10.1	3.7	10.1
In Baird Peak area	miles	0.7	0.0	2.6	0.0	2.6
Open road density	mi/sq. mi.	0.67	0.67	0.67	0.67	0.67
Timber Sales						
Number of sales (Max.)	#	8	15	18	7	18
Average sale size	MMBF	0.99	0.95	0.94	0.94	0.94
Smallest sale	MMBF	0.14	0.04	0.04	0.65	0.04
Economics						
Total Project Cost	millions	$2.3	$3.6	$5.7	$2.0	$5.7
Average harv/const cost	$/MBF	$286	$252	$337	$302	$337
Net Value***	$/MBF	235, -97	269, -63	184, -148	219, -113	184, -148
Harvest/mile of road	MMBF	1.1	2.0	0.8	0.8	0.8
Employment	jobs	42	75	89	35	89

* excluding right-of-way volume
** MMBF = million board feet
***range from high to low market prices

Issue 1: High Value Wildlife and Fish Habitats

Alternative 1 has no timber harvest or road construction and, in comparison with the other alternatives, has no adverse effects to fish or wildlife habitats. All action alternatives incorporate and apply Forest Plan standards and guidelines for riparian areas, the beach and estuary fringe, goshawk, and marten. No timber harvest would occur in riparian or beach and estuary fringe habitats in any alternative, all harvest units will be partial cut, using two-aged systems.

Old-growth Habitat Reserves

Each VCU in the Project Area includes a small old-growth habitat reserve (Old-growth Habitat Land Use Designation), part of a forest-wide system of old-growth habitat reserves. Alternative 1 incorporates the reserve configurations identified in the Forest Plan. The reserves identified in VCU's 582 and 583 do not meet the minimum requirements for total acres and the reserves in VCU's 581 and 583 do not meet the minimum requirements for acres of productive old growth (POG) for this alternative. Alternatives 2, 3, 4, and 5 incorporate reserve configurations developed with interagency involvement, which include more low-elevation deer winter habitat. No changes are proposed for the small reserve in VCU 572. The boundaries of the reserve in VCU 581, and boundaries and location of the reserve in VCU 582 and 583 are proposed for change to incorporate more low-elevation POG. 30 percent of the acreage allocated to VCU 583 were mapped in adjacent VCU 582 to better meet the need for low-elevation habitat within the small old-growth habitat reserve. Alternative 6 incorporates reserve configurations similar to those in the other action alternatives, however the boundaries of the reserves in VCU's 581, 582, and 583 have shifted west from the coastline to exclude the Transportation and Utility System land use designation.

Key Wildlife Habitats/Areas

In terms of selected key wildlife habitats or areas (see Table 2-6), Alternatives 2 and 5 show similar and consistently lower adverse effects than Alternatives 3, 4, and 6, which are also generally similar. Alternatives 3, 4, and 6 harvest more high-volume old growth and low-elevation old growth than do Alternatives 2 and 5. Alternatives 2, 4, and 6 have a smaller average unit size than Alternatives 3 and 5 (26/27/27 acres versus 34/36 acres), but Alternatives 4 and 6 have more than twice the number of units than does Alternative 2. Overall, Alternative 2 minimizes forest fragmentation in its combination of lower acres of harvest in key habitats, and fewer, smaller units, but is not substantially different than Alternative 5, which has fewer but larger units and similar harvested acres in key habitats.

Old-growth Habitat Connectivity

Alternative 2 has the lowest average unit size and comes closest to matching natural disturbances. The combination of smaller unit size and fewer units for Alternative 2 would result in relatively better connectivity remaining after harvest than in the other action alternatives. Alternatives 4 and 6 have a slightly higher average unit size and contain more than twice the number of harvest units as Alternative 2. Alternatives 3 and 5 have higher average unit sizes. Alternative 5 has the fewest units overall, and based on number of units would create the least fragmentation.

Luck Lake Drainage

Timber harvest and proposed road construction vary for the action alternatives within the Luck Lake drainage. Alternatives 2 and 5 harvest the fewest acres within this drainage (359 and 263 acres), while Alternatives 3, 4, and 6 harvest the most (596, 617, and 617 acres). Alternatives 2 and 3 propose the fewest miles of road construction in this drainage (0.3 and 0.6 miles), while Alternatives 4, 5, and 6 propose the most (3.2, 1.1, and 3.2 miles). The floodplains of the Luck Lake drainage will not be affected, and riparian areas will be

excluded from timber harvest under Forest Plan standards and guidelines. The Luck Lake drainage has the majority of the Project Area's high gradient contained streams, and blowdown could occur in up to 15 percent of the riparian areas of these streams adjacent to harvest units. Timber harvest on forested wetlands in the Luck Lake drainage is proposed for all action alternatives, as is road construction. Alternatives 5 and 2 have the fewest acres of wetland harvest (157 and 226 acres), compared with Alternatives 3, 4, and 6 (344, 364, and 364 acres). Alternatives 3 and 2 propose the least specified road construction on wetlands (0.0 and 0.5 miles), as compared with Alternatives 4, 5, and 6 (2.9, 0.8, and 2.9 miles). Overall, Alternative 5 has the fewest acres impacted by timber harvest and road building on wetlands.

Issue 2: Timber Sale Economics

The alternatives differ in the total amount of timber harvest and road construction proposed, with Alternatives 4 and 6 having the highest harvest (1,038 acres) and considerably more road construction (12.3 new road miles). Alternatives 2 and 5 are very similar in total harvest acres (461 and 426 acres), but Alternative 2 has less road construction (3.9 versus 4.3 miles). Alternative 3 has the third highest harvest (843 acres) and the fewest new road miles (2.3).

Alternative 3, which minimizes road construction, has the lowest average overall cost per MBF ($252), somewhat lower than Alternatives 2 and 5. Alternatives 4 and 6 have the highest average cost per MBF, which at $337 is substantially higher than the other three action alternatives. These costs are largely related to road construction, as can be seen in the "harvest/mile of road" column in the table. Although Alternative 3 has a higher project cost than Alternative 2 or 5, it achieves 2.0 MMBF of harvest for every mile of road construction and reconstruction, twice the amount of the other action alternatives. Alternative 3 has the potential for offering the most economic sales.

Alternative 1 proposes no timber harvest, and thus offers no opportunity for timber-related employment or personal income. The action alternatives would result in timber-related employment opportunities in direct proportion to their total harvest volumes. Alternatives 4 and 6 offer the most timber volume (16.9 MMBF) and generate the highest potential number of jobs (89). These amounts are somewhat more than Alternative 3 (14.2 MMBF and 75 jobs) but over twice the amounts of Alternatives 2 or 5.

Issue 3: Timber Sale Size and Complexity

Of the action alternatives, Alternative 5 harvests the least volume with helicopter logging systems (1.5 MMBF) and ranks third in the volume requiring "other" cable (generally long-span) logging systems (1.0 MMBF). It offers the most economic logging system opportunities in proportion to its total harvest volume, however this is partly offset by the need for more road construction than Alternatives 2 and 3. Alternatives 4 and 6 have the highest harvest volume using running skyline, but also considerably more road construction.

Alternatives 3, 4, and 6 have the higher numbers of individual sale opportunities (potentially divisible into 15, 18, and 18 sales), the smallest of which would be only about 40,000 board feet. Alternatives 3, 4, 5, and 6 have similar average sale sizes (averaging 0.9 MMBF), lower than Alternative 2 (averaging 1.0 MMBF). Alternatives 3, 4, and 6 thus have more flexibility to provide a greater number of very small sale offerings. As discussed under the previous issue, Alternative 3 minimizes road construction and has the lowest average harvest cost of the action alternatives, whereas Alternatives 4 and 6 have the highest average cost. Although it has the goal of providing less costly small sales, Alternative 5 has fewer options with only 7 potential sales, the smallest of which would be 650,000 board feet. Alternative 3 therefore presents the most opportunities for small, relatively economical sales.

Issue 4: New Road Construction

Alternative 3 has the lowest amount of new road construction (2.3 miles) and the least total construction and reconstruction (7.2 miles). Alternative 2 is comparable in overall road miles (7.5) but constructs 3.9 miles of new road. Alternative 3 thus opens the fewest areas with new road access. Alternative 5 proposes 4.3 miles of new road construction. Neither Alternatives 3 nor 5 build roads into the Baird Peak area. Alternatives 4 and 6, which have considerably more new road construction (12.3 miles) than the other alternatives, would also build 2.6 miles of road in the Baird Peak area. Alternative 2 builds 0.7 mile of road in that area.

Issue 5: Access Management

The potential long-term effects of the new road construction just discussed will be reduced through implementation of an access management plan for the Luck Lake Project Area. This plan differs by action alternative only to the extent that the alternatives build different amounts of new roads, and the plan will close all newly-constructed roads at the end of the project. The access management strategy is to address and reduce, through access restrictions, some of the currently existing effects on wildlife and wildlife habitats, fisheries, soils, and water quality, while leaving other roads open for public uses and future timber management. As the result of an evaluation of resource concerns and potential impacts, the access management plan proposes to close all newly constructed roads from the Luck Lake Project and another 22.8 miles of roads currently open. Another 28.2 miles of roads currently closed would remain so. When the access management plan is fully implemented, 37.3 miles of roads within the Project Area will remain open to public uses.

Alternative 1 leaves all existing roads in their current condition and does not propose any new access restrictions.

Open Road Density

The open road density within the Project Area is currently 1.08 miles of open, drivable road per square mile of land (miles/mile^2). This would remain unchanged under Alternative 1. Implementing the access management plan proposed for Alternatives 2, 3, 4, 5, and 6 would decrease the open road density to 0.67 miles/mile^2.

Project-specific Mitigation Measures

The analysis documented in this EIS discloses the possible adverse impacts that may occur from implementing the actions proposed under each alternative. Measures have been formulated to mitigate or reduce these impacts. Forest Plan direction, listed in this chapter and in Chapter 1, guided the development of these measures.

IDT specialists use on-the-ground inventories, computer (GIS) data, and aerial photographs to prepare the documents called unit cards for each harvest unit in the unit pool for the project. Cards are also prepared for each segment of road. Resource specialists include their concerns on the cards and then describe how the concerns can be mitigated (if not completely avoided) in the design of each unit and road segment. These cards may be found in Appendices B and C of the Draft EIS and Appendices 2 and 3 of the ROD for the Selected Alternative. Resource concerns and mitigation measures may be refined further during final layout, when specialists have a final opportunity to revise their unit and road card recommendations.

Applicable Forest Plan standards and guidelines, the "Best Management Practices" (BMP's) used to meet the requirements of the Clean Water Act, and project-specific mitigation measures are identified on the harvest unit and road cards. Appendices 2 and 3 in the Record of Decision contain a list of mitigation measures used for the Selected Alternative.

Findings and Disclosures

Several of the laws and executive orders listed in Chapter 1 require project-specific findings or other disclosures. These are included here, and also in the Record of Decision. They apply to all alternatives considered in detail in this EIS.

National Forest Management Act (NFMA)

All project alternatives fully comply with the Forest Plan and the Alaska Regional Guide. This project incorporates all applicable Forest Plan forest-wide standards and guidelines and management area prescriptions as they apply to the Project Area, and complies with Forest Plan goals and objectives. This includes the additional direction contained in the 1999 Record of Decision for the Forest Plan Revision. All required interagency review and coordination has been accomplished; new or revised measures resulting from this review have been incorporated.

The Forest Plan complies with all resource integration and management requirements of 36 CFR 219 (219.14 through 219.27). Application of Forest Plan direction for the Luck Lake project ensures compliance at the project level. Specific NFMA findings pertaining to silvicultural systems are included in the project planning record.

Endangered Species Act

None of the alternatives is anticipated to have a direct, indirect or cumulative effect on any threatened or endangered species in or outside the Project Area. Consultations with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service have been conducted, and these agencies have concurred that the proposed project is not likely to affect any threatened or endangered species. A complete biological assessment is included in the planning record.

Tongass Timber Reform Act

Application of Forest Plan riparian standards and guidelines ensures that no commercial timber harvest will occur within 100 feet of any Class I stream or any Class II stream flowing directly into a Class I stream.

National Historic Preservation Act

Cultural resource surveys of varying intensities have been conducted, following inventory protocols approved by the Alaska State Historic Preservation Officer. Native communities have been contacted and public comment encouraged. The consultation and concurrence process with the State Historic Preservation Officer has been concluded. No significant effects on known cultural resources are anticipated.

Federal Cave Resource Protection Act

No known significant caves in the Project Area will be directly or indirectly affected by project activities. Forest Plan karst and caves standards and guidelines are applied to areas known or suspected to contain karst resources.

Alaska National Interest Lands Conservation Act (ANILCA)

A subsistence evaluation was conducted for the six alternatives considered in detail for the proposed action in the Luck Lake Final EIS in accordance with Alaska National Interest Lands Conservation Act (ANILCA) Section 810. Open houses followed by ANILCA Section 810 hearings were held in Coffman Cove, Wrangell, Klawock, Naukati, Thorne Bay, and Whale Pass.

The evaluation of comments from the public, subsistence hearing testimony, and additional analysis indicates that the potential foreseeable effects from the alternatives in the Luck Lake Project Area do not indicate a significant possibility of a significant restriction of subsistence uses for, bear, furbearers, marine mammals, waterfowl, salmon, other finfish, shellfish, and other foods such as berries and roots. Analysis does indicate that all alternatives including the no-action alternative present a significant possibility of a significant restriction of subsistence uses for deer. See the Subsistence section in Chapter 3 for more information.

This EIS describes the mitigation measures that will be implemented as a part of each alternative. Most of the mitigation measures are designed to maintain fish and wildlife habitat productivity at the highest level possible, while still producing a supply of timber. Measures were taken in the Forest Plan to maintain population viability within this province by: 1) the size of the large and medium old-growth habitat reserves were enlarged above minimum requirements; 2) the reserves were specifically locate to provide for connectivity from north to south (from Port Protection to Karta Wilderness)and east to west (from the Clarence Strait shoreline to Honker Divide); 3) specific standards and guidelines were added for goshawks and marten in this province to prevent further fragmentation and provide habitat structure; and 4) the timber harvest rotation was extended to 200 years..

Clean Water Act

The design of harvest units and roads is in accordance with Forest Plan standards and guidelines, the Alaska Regional Guide, Best Management Practices, and applicable Forest Service manual and handbook direction. The harvest unit and road cards for the Luck Lake project (Appendices B and C of the Draft EIS and Appendices 2 and 3 of the ROD for the Selected Alternative) include specific requirements prescribed to prevent or reduce non-point sediment sources. Monitoring and evaluation of the implementation and effectiveness of Forest Plan standards and guidelines and Best Management Practices will occur. Project activities are expected to meet all applicable State of Alaska water quality standards.

State regulations provide for variances from anti-degradation requirements and water quality criteria. Logging and road building operators are responsible for compliance, including obtaining variances required by the State. The Forest Service monitors compliance. Timber harvest activities are expected to qualify for any variances in accordance with the Alaska State Code, 18 AAC 70.015.

All roads, landings and rock pits will be designed and constructed in accordance with the applicable Best Management Practices listed at 33 CFR 323.4(a). No permits under Section 404 of the Clean Water Act will be required.

Clean Air Act

Emissions anticipated from the implementation of any project alternative will be of short duration and are not expected to exceed State of Alaska ambient air quality standards (18 AAC 50).

Coastal Zone Management Act

Forest Plan standards and guidelines applicable to the timber harvest activities of the Luck Lake project meet or exceed the requirements of the State of Alaska Forest Practices Act. The State of Alaska, Office of Governmental Coordination, has conducted a consistency review of the project and, subject to the incorporation of specifically agreed upon measures, concurs with the Forest Service that the project is consistent with the Coastal Zone Management Act.

Executive Order 11988

The numerous streams in the Luck Lake Project Area make it essentially impossible to avoid all floodplains during timber harvest and road construction. Forest Plan standards and guidelines for riparian areas exclude most commercial timber harvesting from floodplains. Roads may be constructed in or through floodplains subject to the design requirements of the Best Management Practices. Effects on floodplains from project activities have been avoided or minimized as much as possible.

Executive Order 11990

Because wetlands are so extensive in the Luck Lake Project Area, it is not feasible to avoid all wetland areas. Wetland soils not meeting Forest Plan criteria for timber harvest suitability are excluded from the harvest base. Soil moisture regimes and vegetation on some wetlands may be altered in some harvest units; however, the affected wetlands will meet wetland classification and will still function as wetlands in the ecosystem.

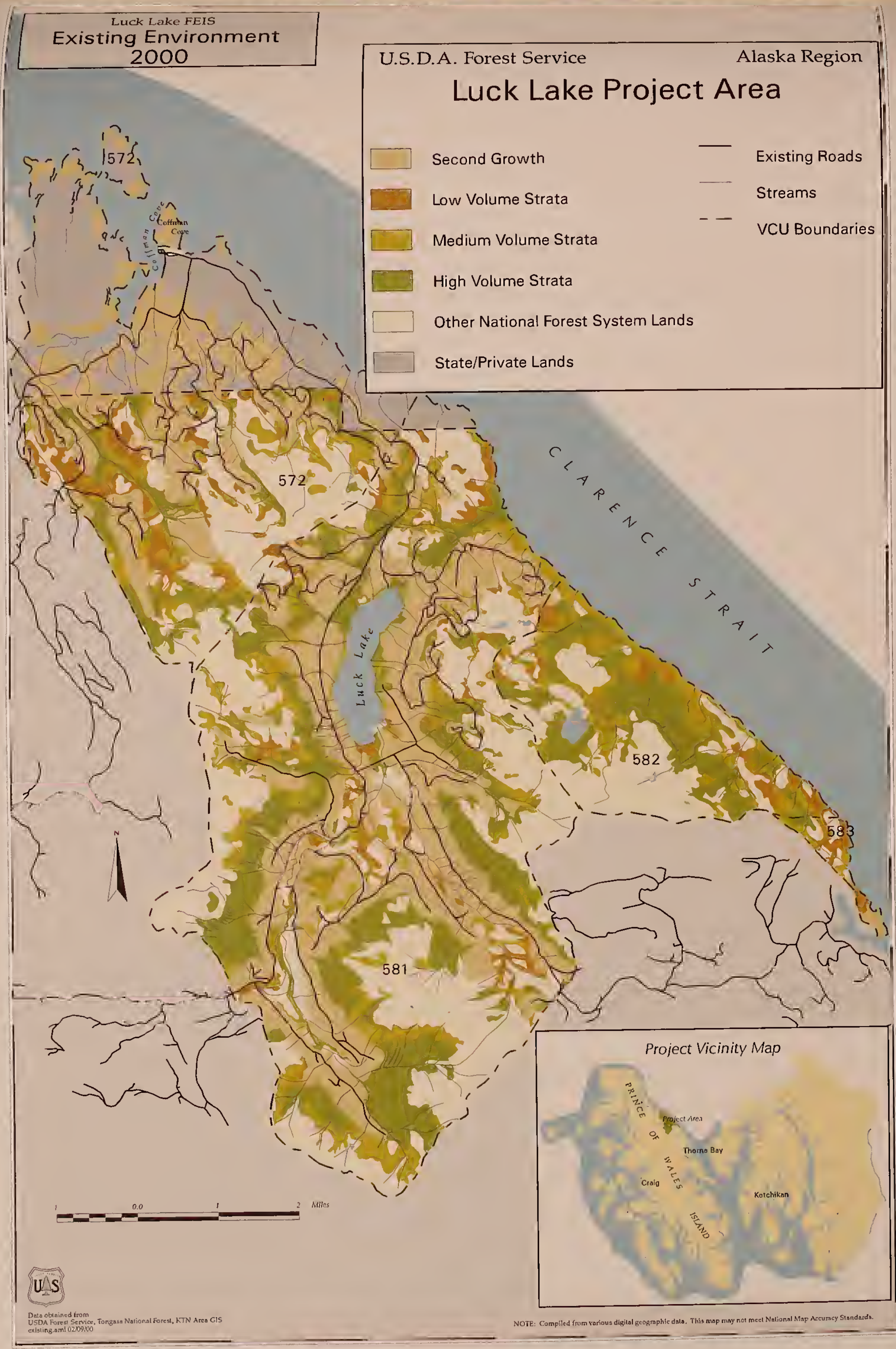
Road construction across wetlands is permitted within Alaska. Such construction requires the filling-in of wetlands and creates permanent loss of wetland habitat. Effects to wetlands are minimized through the application of specific Best Management Practices. Road construction through wetlands is avoided where possible.

Executive Order 12898

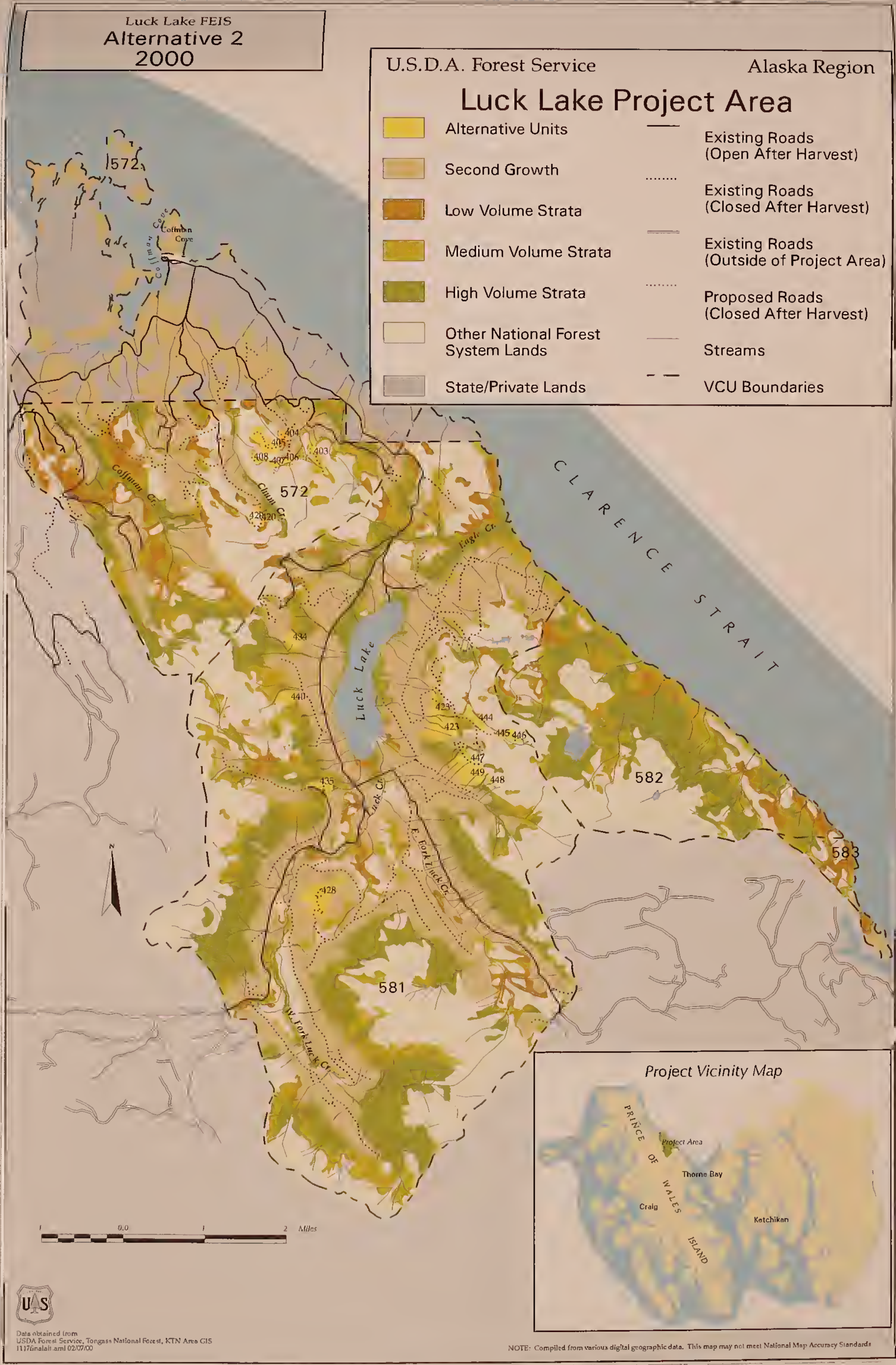
Implementation of any project alternative is not anticipated to cause disproportionate adverse human health or environmental effects to minority or low-income populations. (See also the ANILCA Section 810 findings.)

Executive Order 12962

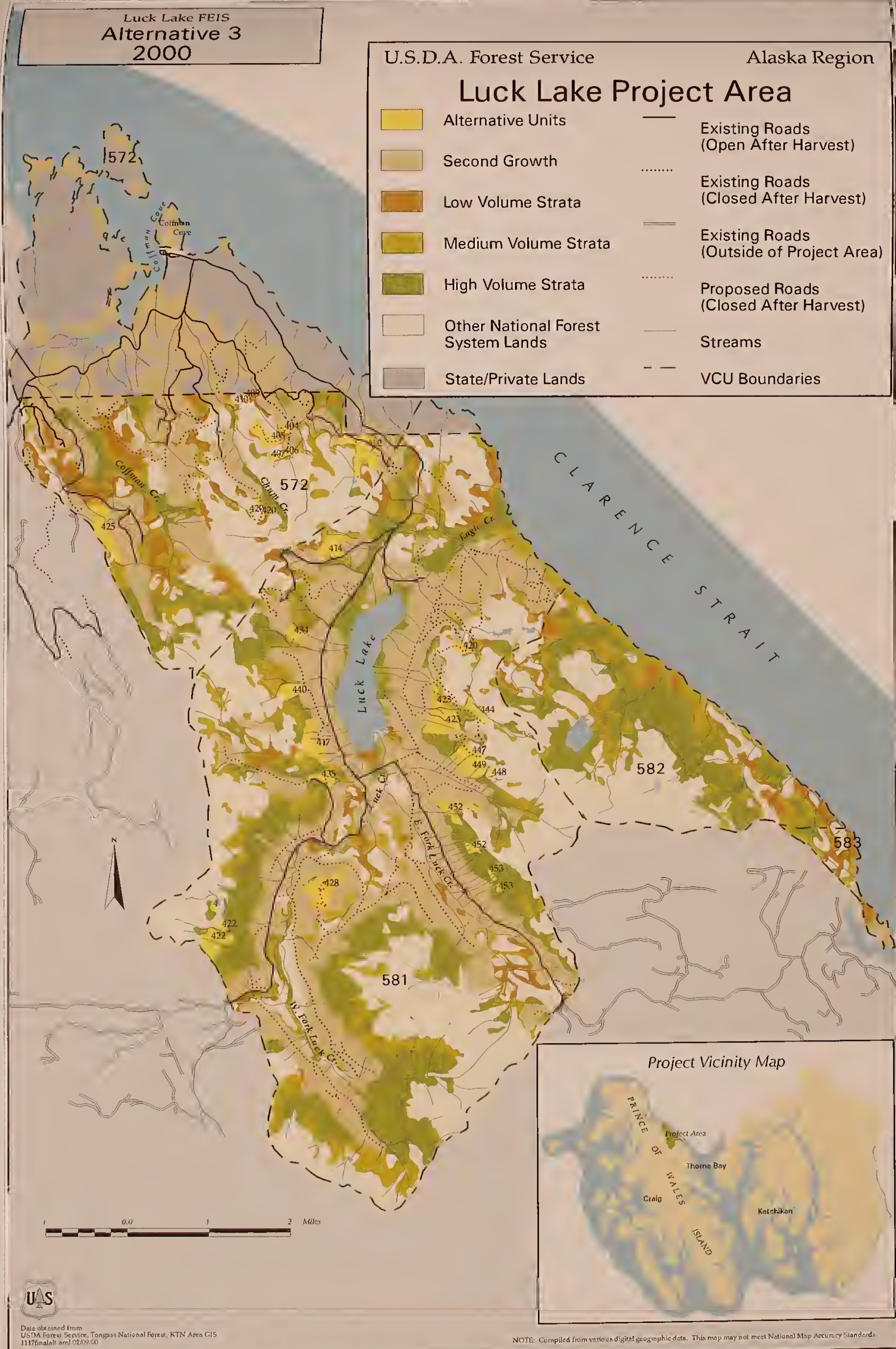
With the application of Forest Plan standards and guidelines, including those for riparian areas, no significant adverse effects to freshwater or marine resources will occur. Post-project road closures could limit access to some recreational fishing opportunities to foot or permitted off-highway vehicle means. However, most recreational fishing throughout the Tongass occurs by boat in saltwater, and any adverse effects would be minimal.



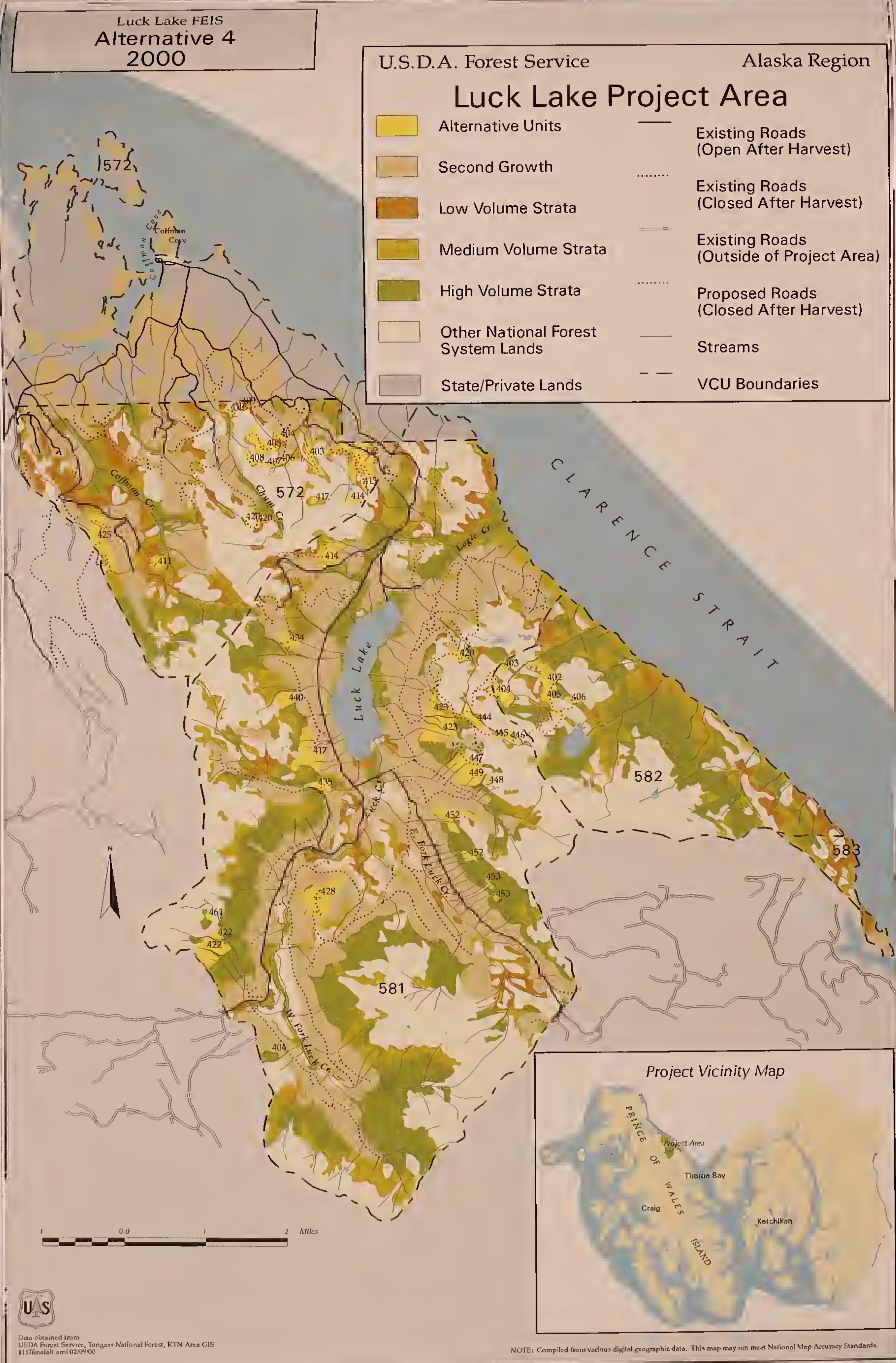
Luck Lake FEIS
Existing Environment
2000
U.S.D.A. Forest Service
Alaska Region
Luck Lake Project Area
Second Growth
Low Volume Strata
Medium Volume Strata
High Volume Strata
Other National Forest System Lands
State/Private Lands
Existing Roads
Streams
VCU Boundaries
572
Coffman Cove
572
CLARENCE STRAIT
Luck Lake
582
583
581
N
1
0.0
1
2
Miles
Project Vicinity Map
PRINCE OF WALES ISLAND
Project Area
Thorne Bay
Craig
Ketchikan
Data obtained from
USDA Forest Service, Tongass National Forest, KTN Area GIS
existing.aml 02/09/00
NOTE: Compiled from various digital geographic data. This map may not meet National Map Accuracy Standards.



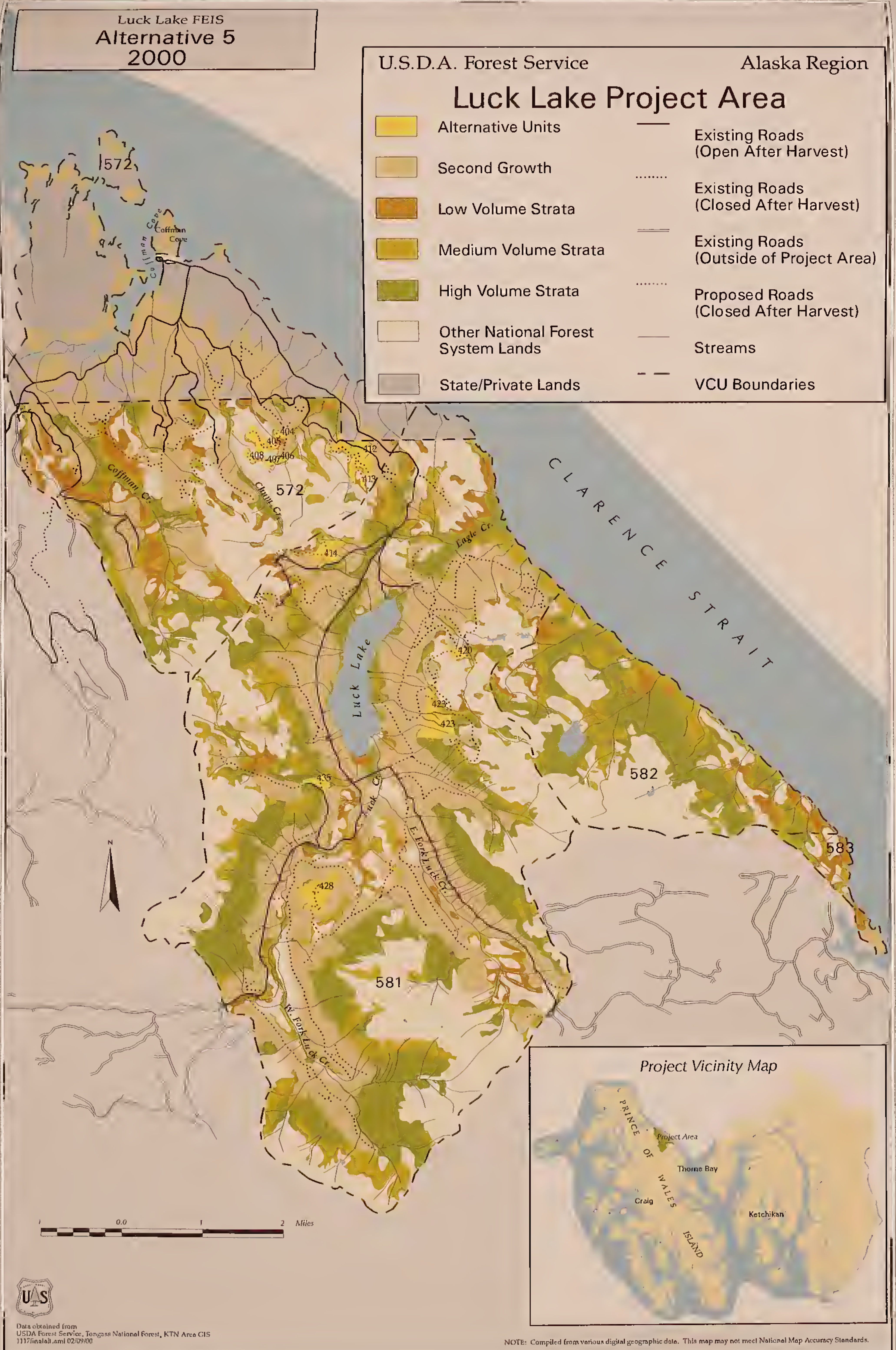
Luck Lake FEIS
Alternative 2
2000
U.S.D.A. Forest Service
Alaska Region
Luck Lake Project Area
Alternative Units
Second Growth
Low Volume Strata
Medium Volume Strata
High Volume Strata
Other National Forest System Lands
State/Private Lands
Existing Roads (Open After Harvest)
Existing Roads (Closed After Harvest)
Existing Roads (Outside of Project Area)
Proposed Roads (Closed After Harvest)
Streams
VCU Boundaries
572
Coffman Cove
Coffman Cr.
Clam Cr.
404
405
406
407
408
403
420
572
Eagle Cr.
CLARENCE STRAIT
434
440
Luck Lake
423
444
445
446
447
449
448
582
583
435
Luck Cr.
E. Fork Luck Cr.
428
581
W. Fork Luck Cr.
N
0.0
1
2
Miles
Project Vicinity Map
PRINCE OF WALES ISLAND
Project Area
Thorne Bay
Craig
Ketchikan
Data obtained from
USDA Forest Service, Tongass National Forest, KTN Area GIS
1117finalalt.aml 02/07/00
NOTE: Compiled from various digital geographic data. This map may not meet National Map Accuracy Standards

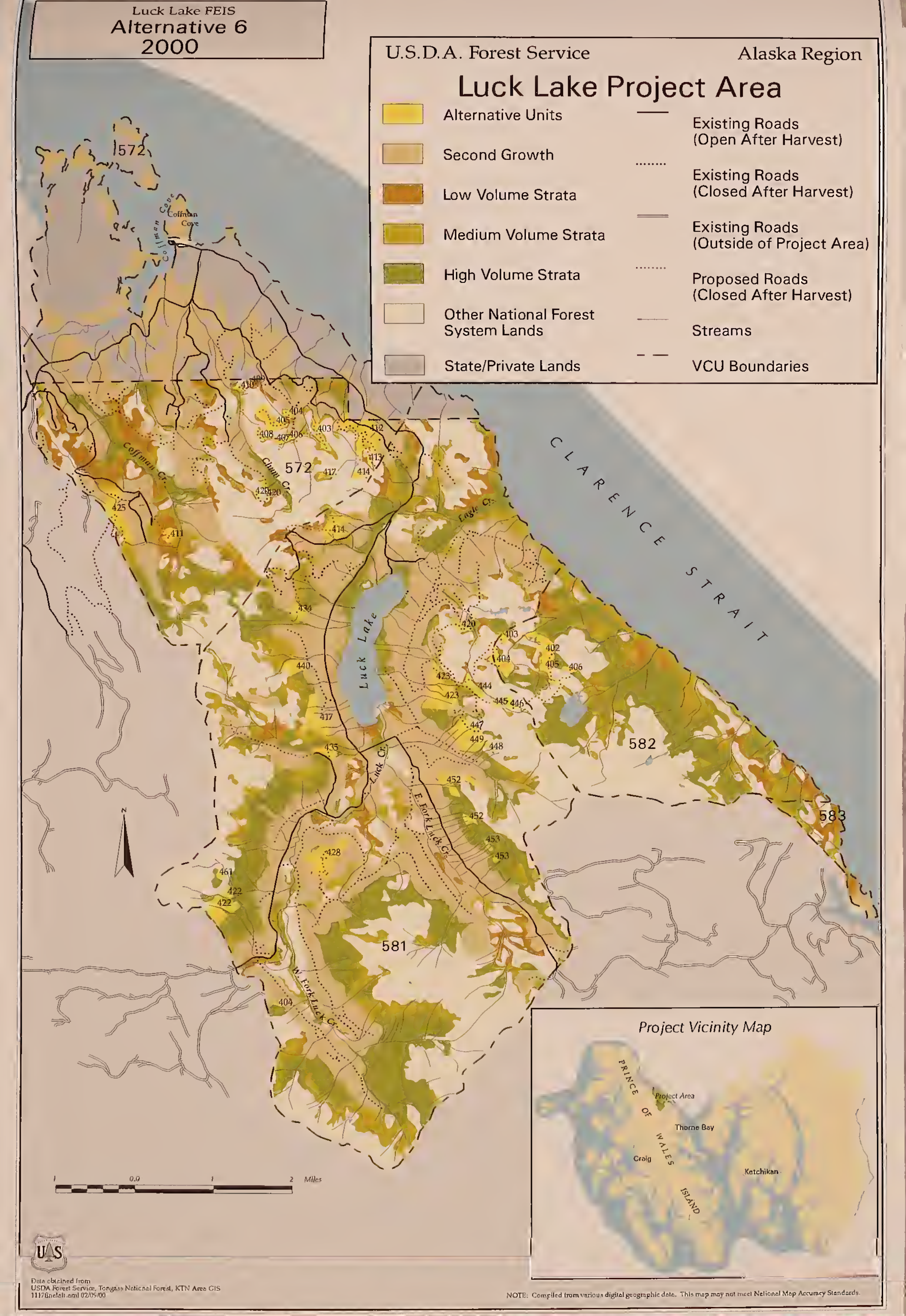


Luck Lake FEIS
Alternative 3
2000
U.S.D.A. Forest Service
Alaska Region
Luck Lake Project Area
Alternative Units
Second Growth
Low Volume Strata
Medium Volume Strata
High Volume Strata
Other National Forest System Lands
State/Private Lands
Existing Roads (Open After Harvest)
Existing Roads (Closed After Harvest)
Existing Roads (Outside of Project Area)
Proposed Roads (Closed After Harvest)
Streams
VCU Boundaries
CLARENCE STRAIT
572
Coffman Cove
Coffman Cr.
Clum Cr.
Eagle Cr.
Luck Lake
Luck Cr.
E. Fork Luck Cr.
W. Fork Luck Cr.
582
583
581
Project Vicinity Map
PRINCE OF WALES ISLAND
Project Area
Thorne Bay
Craig
Ketchikan
Miles
Data obtained from
USDA Forest Service, Tongass National Forest, KTN Area GIS
NOTE: Compiled from various digital geographic data. This map may not meet National Map Accuracy Standards.

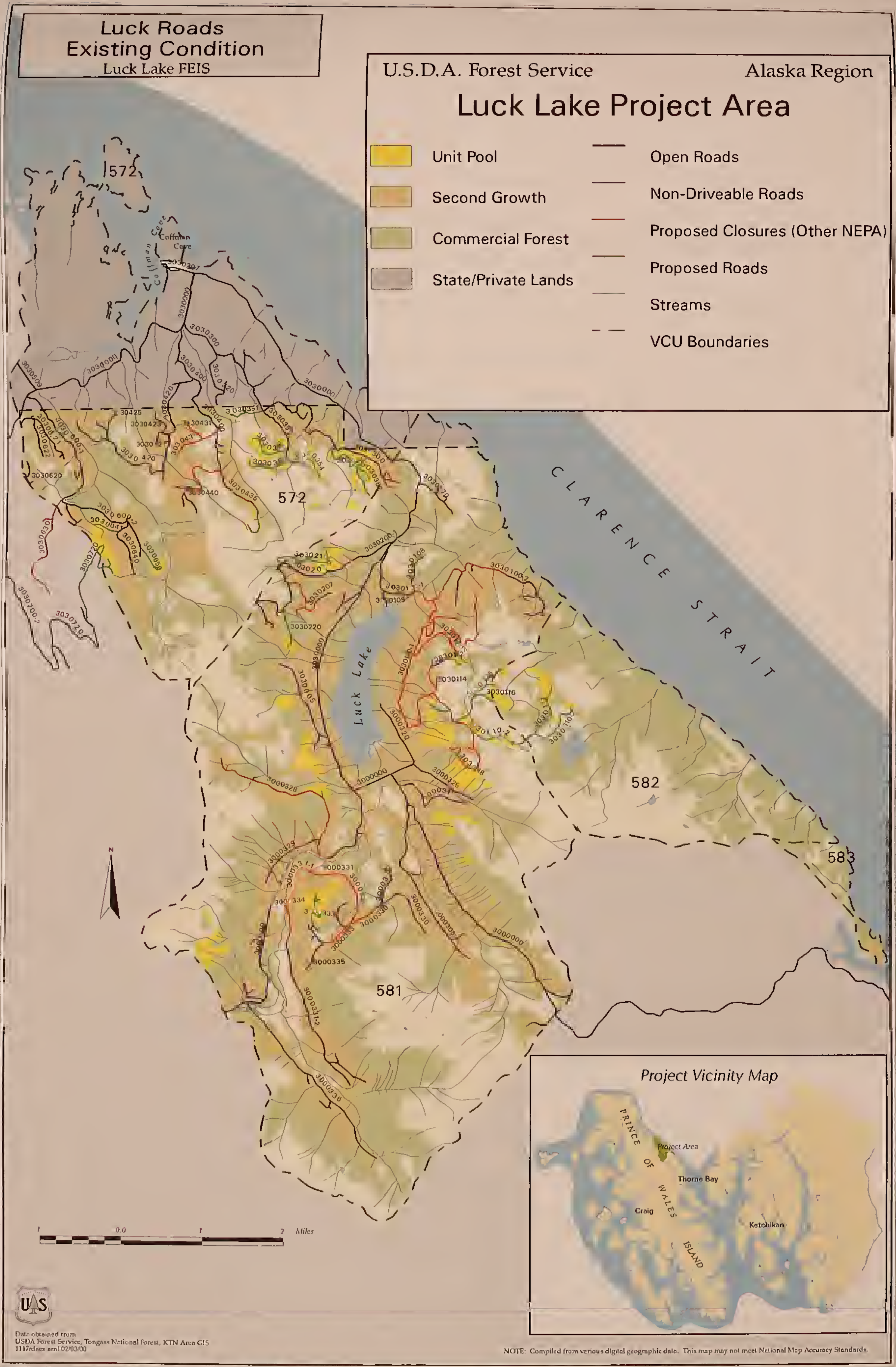


Luck Lake FEIS
Alternative 4
2000
U.S.D.A. Forest Service
Alaska Region
Luck Lake Project Area
Alternative Units
Second Growth
Low Volume Strata
Medium Volume Strata
High Volume Strata
Other National Forest System Lands
State/Private Lands
Existing Roads (Open After Harvest)
Existing Roads (Closed After Harvest)
Existing Roads (Outside of Project Area)
Proposed Roads (Closed After Harvest)
Streams
VCU Boundaries
CLARENCE STRAIT
Coffman Cove
Coffman Cr.
Luck Lake
Luck Cr.
E. Fork Luck Cr.
W. Fork Luck Cr.
572
581
582
583
N
0.0
1
2
Miles
Project Vicinity Map
PRINCE OF WALES ISLAND
Project Area
Thorne Bay
Craig
Ketchikan
Data obtained from
USDA Forest Service, Tongass National Forest, KTN Area GIS
1117finalalt.aml 02/09/00
NOTE: Compiled from various digital geographic data. This map may not meet National Map Accuracy Standards.

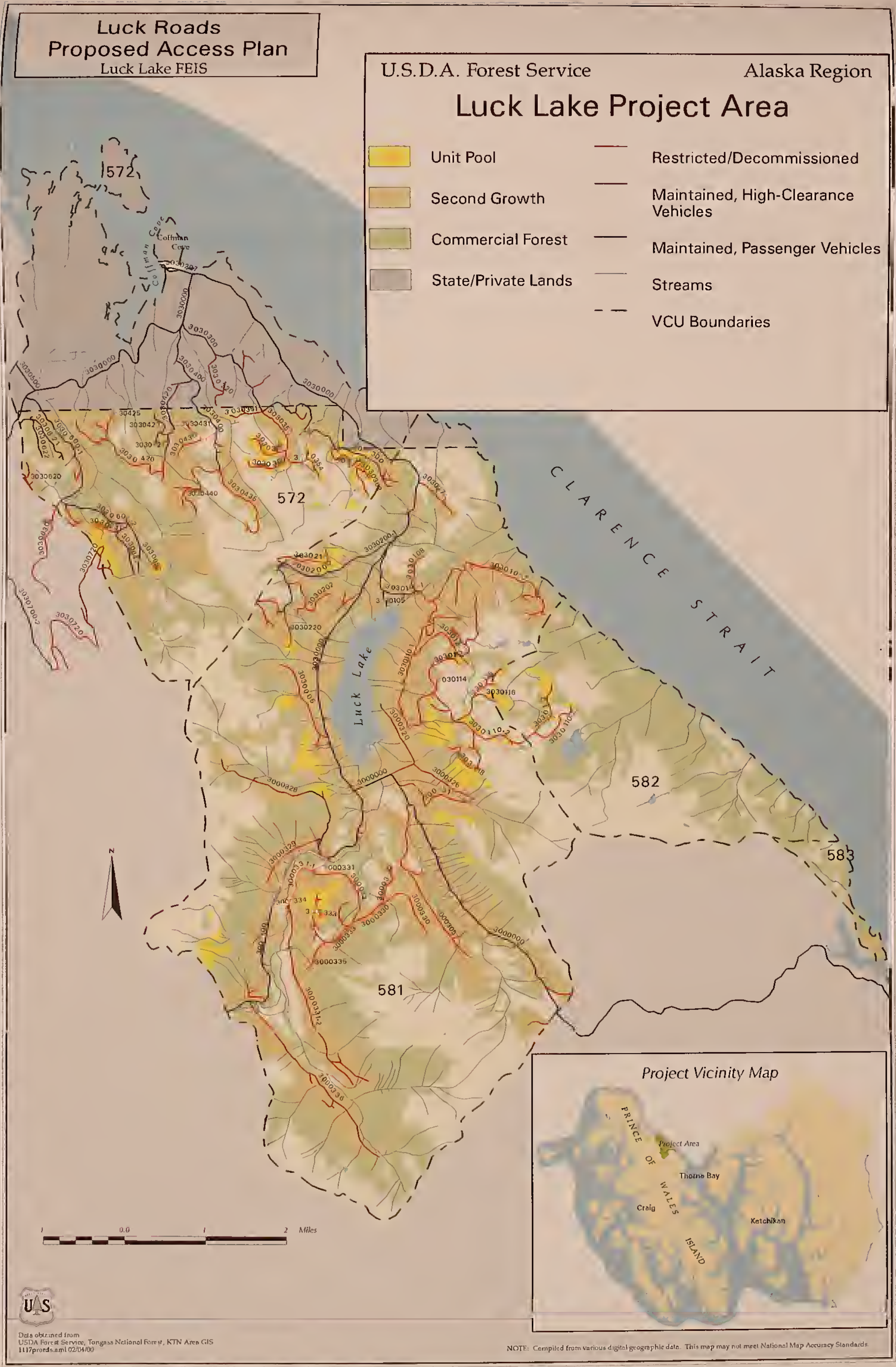

Luck Lake FEIS
Alternative 5
2000
U.S.D.A. Forest Service
Alaska Region
Luck Lake Project Area
Alternative Units
Second Growth
Low Volume Strata
Medium Volume Strata
High Volume Strata
Other National Forest System Lands
State/Private Lands
Existing Roads (Open After Harvest)
Existing Roads (Closed After Harvest)
Existing Roads (Outside of Project Area)
Proposed Roads (Closed After Harvest)
Streams
VCU Boundaries
572
Coffman Cove
Coffman Cr.
Chum Cr.
404
405
406
407
408
412
413
414
420
423
428
435
Eagle Cr.
CLARENCE STRAIT
Luck Lake
Luck Cr.
E. Fork Luck Cr.
W. Fork Luck Cr.
581
582
583
0.0
1
2
Miles
Project Vicinity Map
PRINCE OF WALES ISLAND
Project Area
Thorne Bay
Craig
Ketchikan
Data obtained from
USDA Forest Service, Tongass National Forest, KTN Area GIS
1117/finalalt.aml 02/09/00
NOTE: Compiled from various digital geographic data. This map may not meet National Map Accuracy Standards.



Luck Lake FEIS
Alternative 6
2000
U.S.D.A. Forest Service
Alaska Region
Luck Lake Project Area
Alternative Units
Second Growth
Low Volume Strata
Medium Volume Strata
High Volume Strata
Other National Forest System Lands
State/Private Lands
Existing Roads (Open After Harvest)
Existing Roads (Closed After Harvest)
Existing Roads (Outside of Project Area)
Proposed Roads (Closed After Harvest)
Streams
VCU Boundaries
CLARENCE STRAIT
Coffman Cove
Coffman Cr.
Luck Lake
Luck Cr.
E. Fork Luck Cr.
W. Fork Luck Cr.
572
581
582
583
Project Vicinity Map
PRINCE OF WALES ISLAND
Project Area
Thorne Bay
Craig
Ketchikan
Miles
Data obtained from
USDA Forest Service, Tongass National Forest, KTN Area GIS
NOTE: Compiled from various digital geographic data. This map may not meet National Map Accuracy Standards.



Luck Roads
Existing Condition
Luck Lake FEIS
U.S.D.A. Forest Service
Alaska Region
Luck Lake Project Area
Unit Pool
Second Growth
Commercial Forest
State/Private Lands
Open Roads
Non-Driveable Roads
Proposed Closures (Other NEPA)
Proposed Roads
Streams
VCU Boundaries
Coffman Cove
CLARENCE STRAIT
Luck Lake
572
581
582
583
Miles
Project Vicinity Map
PRINCE OF WALES ISLAND
Project Area
Thorne Bay
Craig
Ketchikan
Data obtained from
USDA Forest Service, Tongass National Forest, KTN Area GIS
NOTE: Compiled from various digital geographic data. This map may not meet National Map Accuracy Standards.


Luck Roads
Proposed Access Plan
Luck Lake FEIS
U.S.D.A. Forest Service
Alaska Region
Luck Lake Project Area
Unit Pool
Second Growth
Commercial Forest
State/Private Lands
Restricted/Decommissioned
Maintained, High-Clearance Vehicles
Maintained, Passenger Vehicles
Streams
VCU Boundaries
Coffman Cove
CLARENCE STRAIT
Luck Lake
572
582
581
583
Project Vicinity Map
PRINCE OF WALES ISLAND
Project Area
Thorne Bay
Craig
Ketchikan
Miles
Data obtained from
USDA Forest Service, Tongass National Forest, KTN Area GIS
NOTE: Compiled from various digital geographic data. This map may not meet National Map Accuracy Standards.

Chapter 3

Environment and Effects

Chapter 3

Affected Environment and Environmental Consequences

Introduction

This chapter provides information concerning the existing environment of the Luck Lake Project Area and potential consequences to that environment. It also presents the scientific and analytical basis for the comparison of alternatives presented in Chapter 2. Each resource potentially affected by the proposed action or alternatives is described by its current condition and uses.

Following each resource description is a discussion of the potential effects (environmental consequences) to the resource associated with the implementation of each alternative. All significant or potentially significant effects, including direct, indirect, and cumulative effects, are disclosed. Effects are quantified where possible, and qualitative discussions are also included. The means by which potential adverse effects will be reduced or mitigated are described.

The discussions of resources and potential effects take advantage of existing information included in the Tongass Land and Resource Management Plan (Forest Plan) FEIS, other project EIS's, project-specific resource reports and related information, and other sources as indicated. Where applicable, such information is briefly summarized and referenced to minimize duplication. The planning record for the Luck Lake Project includes all project-specific information, including resource reports, the watershed analysis, and other results of field investigations. The record also contains information resulting from public involvement efforts. The planning record is located at the Thorne Bay Ranger District Office in Thorne Bay, Alaska, and is available for review during regular business hours. Information from the record is available upon request.

3 Environment and Effects

Land Divisions

The land area of the Tongass National Forest has been divided in several different ways to describe the different resources and allow analysis of how they may be affected by Forest Plan and project level decisions. These divisions vary by resource since the relationship of each resource to geographic conditions and zones also varies. The allocation of Forest Plan land use designations (discussed in Chapter 1) is one such division. Two divisions important for the present effects analysis are described briefly here.

Value Comparison Units (VCU's)

These are distinct geographic areas, each encompassing a drainage basin containing one or more large stream systems. The boundaries usually follow major watershed divides. The Luck Lake Project Area consists of four VCU's, numbers 571, 581, 582, and part of 583, as discussed in Chapter 1. Chapter 1 also includes a map showing their locations.

Wildlife Analysis Areas (WAA's)

These are Forest Service land divisions that correspond to the "Minor Harvest Areas" used by the Alaska Department of Fish and Game. Approximately 190 apply to the Tongass National Forest. 97 percent of the Luck Lake Project Area is within WAA 1420. Information estimated by WAA is used in the wildlife and subsistence analyses.

Analyzing Effects

Environmental consequences are the effects of implementing an alternative on the physical, biological, social, and economic environment. The Council on Environmental Quality (CEQ) regulations implementing the National Environmental Policy Act (NEPA) include a number of specific categories to use for the analysis of environmental consequences. Several are applicable to the analysis of the proposed project and alternatives, and form the basis of much of the analysis that follows. They are explained briefly here.

Direct, Indirect, and Cumulative Effects

Direct environmental effects are those occurring at the same time and place as the initial cause or action. Indirect effects are those that occur later in time or are spatially removed from the activity, but would be significant in the foreseeable future. Cumulative effects result from incremental effects of actions, when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative effects can result from individually minor, but collectively significant actions taking place over a period of time.

Unavoidable Adverse Effects

Implementation of any action alternative would cause some adverse environmental effects that cannot be effectively mitigated or avoided. Unavoidable adverse effects often result from managing the land for one resource at the expense of the use or condition of other resources. Many adverse effects can be reduced, mitigated, or avoided by limiting the extent or duration of effects. The interdisciplinary procedure used to identify specific harvest units and roads was designed to eliminate or lessen the significant adverse consequences. The application of Forest Plan standards and guidelines, Best Management Practices, project-specific mitigation measures, and monitoring are all intended to further limit the extent, severity, and duration of potential effects. Such measures are discussed throughout this chapter. Regardless of the use of these measures, some adverse effects will occur. The purpose of this chapter is to fully disclose these effects.

Short-term Use and Long-term Productivity

Short-term uses and their effects are those that occur annually or within the first few years of project implementation. Long-term productivity refers to the capability of the land and resources to continue producing goods and services long after the project has been implemented. Under the Multiple Use-Sustained Yield Act, and the National Forest

Management Act, all renewable resources are to be managed in such a way that they are available for future generations. The harvesting and use of standing timber can be considered a short-term use of a renewable resource. As a renewable resource, trees can be reestablished and grown again if the long-term productivity of the land is maintained. This long-term productivity is maintained through the application of the resource protection measures just described, in particular those applying to the soil and water resources. These are also discussed throughout this chapter.

Irreversible and Irretrievable Commitments

Irreversible commitments are decisions affecting non-renewable resources such as soils, wetlands, unroaded areas, and cultural resources. Such commitments are considered irreversible because the resource has deteriorated to the point that renewal can occur only over a long period of time or at a great expense, or because the resource has been destroyed or removed. The construction of roads for timber harvesting is an irreversible action because of the time it takes for a constructed road to revert to natural conditions. The conversion of old-growth forest to a managed second-growth stand may also be considered an irreversible commitment.

Irretrievable commitments represent opportunities foregone for the period during which resource use or production cannot be realized. Such decisions are reversible, but the production opportunities foregone are irretrievable. As an example, deferring timber harvest at this time in certain areas due to resource concerns or economics would be an irretrievable commitment of timber volume otherwise obtainable. The commitment is irretrievable rather than irreversible, because future entries could harvest those areas if they are still part of the suitable timber base. Irreversible and irretrievable commitments are not usually identified as such in the resource discussion of this chapter.

Available Information

Much of the Tongass National Forest resource data resides in an electronic database formatted for a geographic information system (GIS). The Forest uses GIS software to assist in the analyses of these data. GIS data is available in tabular (numerical) format and as plots displaying data in map format. For this EIS, all the maps, and most of the numerical analyses, are based on GIS resource data.

Knowledge about many of the relationships and conditions of wildlife, fish, forests, jobs, and communities is less than complete. The ecology, inventory and management of a large forest area is a complex and developing science. The biology of wildlife species prompts questions about population dynamics and habitat relationships. The interaction of resource supply, the economy, and communities is the subject matter of an inexact science. However, the basic data and central relationships are sufficiently well established in the respective sciences for the deciding official to make a reasoned choice between the alternatives, and to adequately assess and disclose the possible adverse environmental consequences. New or improved information would be very unlikely to reverse or nullify these understood relationships.

Resources with No Measurable Effects from Project Alternatives

Several resources and uses of the Project Area are likely to remain unaffected by the proposed action or alternatives, or will not be affected to a significant degree. Even though significant effects are not anticipated, most of these resources are discussed in the sections of this chapter, which follow the introduction, to the extent that measurable effects or differences between alternatives are present. Resources or uses for which no measurable effects were identified are discussed briefly here.

Air Quality

All of the action alternatives will have limited, short-term effects on ambient air quality. Such effects, in the form of vehicle emissions and dust, are likely to be indistinguishable from other local sources of airborne particulates, including other motor vehicle emissions, dust from road construction and motor vehicle traffic, residential and commercial heating sources, marine traffic, and emissions from burning at sawmills. The action alternatives could result in short-term supplies of raw wood products to local mills. It is the responsibility of the mill owner or sort yard operator to ensure that mill emissions are within legal limits.

Facilities

There are no logging camps or Forest Service administrative sites in the Luck Lake Project Area. The Thorne Bay Ranger District office is located approximately 17 miles south of the Project Area in Thorne Bay, Alaska.

Heritage Resources

The Luck Lake Project Area falls within a region of Prince of Wales Island where considerable archaeological survey has been conducted, but very few archaeological or historic sites have been recorded. Several reasons may explain this situation. In the earlier periods of prehistory (10,000 to 5,000 years before present), this area may have been less hospitable to human occupation than other areas of the island due to harsh climatic conditions. In more recent ethnographic times, this steep section of the coast appears to have been little used by Native people. According to Goldschmidt and Haas (1946), who conducted interviews with Native informants in an effort to determine traditional land use patterns, the Luck Lake Project Area was within the territory of the kiks'adi people of the Stikine area. Haida use of this coast extended north on Prince of Wales Island only to Thorne Bay. Goldschmidt and Haas note significant settlements only in Thorne Bay and Coffman Cove (Goldschmidt and Haas 1946:130-131). In Coffman Cove itself, a significant archaeological site (Alaska Heritage Resource Survey #PET-067) has been studied. A recent management report (Reger 1995) by the State of Alaska Office of History and Archaeology notes that the site, likely the focus of seasonal activities, was occupied frequently between 4,000 and 800 years ago. However, Coffman Cove is on non-National Forest System land and, with the exception of one isolated artifact, no cultural resources are known within the Luck Lake Project Area.

All currently planned harvest and road construction activities in the Luck Lake Project Area will fall in low sensitivity areas for cultural resources: high elevations and steep slopes (#95MOU-10-029). Past archaeological survey in these areas has revealed no historic properties. It is expected that there will be no effect on cultural resources from the activities planned here. Post-construction monitoring of a sample of roads and units will be implemented to evaluate the sensitivity model.

Land Status

Under the Alaska Statehood Act of 1959, the State of Alaska is entitled to a certain amount of Federal land. The State was also allowed to identify for selection more acreage than would ultimately be conveyed to State ownership. Selected but as yet unconveyed lands

within the Project Area are excluded from the proposed project and alternatives. Other legislation granted Alaska Native corporations similar selection rights. No Alaska Native land selections or claims are within the Project Area.

Minerals

There are no known mineral occurrences of commercial value within the Luck Lake Project Area. Field investigations by the U.S. Bureau of Mines have located no mines or prospects, and only one minor copper occurrence is known. Bureau of Land Management records indicate no mining claims or patented mining claim groups within the Luck Lake Project Area.

The proposed action would have no direct or indirect impact on mineral resources. In general, the project would affect mining activities only by providing easier access for mapping and surveying due to new road construction in less developed or underdeveloped areas. Geologic mapping would also be enhanced by increased exposure due to road construction and quarry development.

Plans of Other Agencies

The CEQ regulations implementing NEPA require a determination of possible conflicts between the proposed action and the objectives of Federal, State, and local land use plans, policies, and controls for the area. The major land use regulations of concern are Section 810 of the Alaska National Interest Lands Conservation Act (ANILCA), the Coastal Zone Management Act (CZMA), and the State of Alaska's Forest Practices Act. ANILCA Section 810 requirements pertain to subsistence; these are discussed in the Subsistence section of this chapter.

The CZMA was passed by Congress in 1976 and amended in 1990. This law requires Federal agencies conducting activities or undertaking development affecting the coastal zone to ensure that the activities or developments are consistent with approved state coastal management programs to the maximum extent practicable. The State of Alaska passed the Alaska Coastal Management Act in 1977, to establish a program that meets the requirements of the CZMA. In 1990 the State passed a revised Alaska Forest Practices Act. For Federal timber sales, the Forest Practices Act provides the standards to be used for a determination of consistency with the Alaska Coastal Management Act. It also provides specific stream buffer requirements.

The Forest Service has evaluated the alternatives to ensure that the activities and developments affecting the coastal zone are consistent with approved coastal management programs to the maximum extent practicable. The Forest Plan standards, guidelines, and management practices incorporated into the Luck Lake Project meet or exceed those indicated by the Alaska Coastal Management Act and the Alaska Forest Practices Act. The layout of all proposed harvest units complies with Forest Plan standards and guidelines for riparian areas, which meet or exceed the stream buffer requirements in the Forest Practices Act.

Biodiversity and Old Growth

Affected Environment

Biological Diversity

National Forest Management Act (NFMA) regulations (36 CFR 219) define diversity as the distribution and abundance of different plant and animal communities and species. Biological diversity, or biodiversity, refers not only to the variety of organisms in an area; it also includes their genetic composition, the complex pathways that link organisms to one another and to the environment, and the processes that sustain the whole system. Biodiversity plays a key role in how well an ecosystem functions. It can be evaluated at different scales, ranging from genetic and species diversity to landscape diversity.

The risk of genetic and species loss is higher if the structure, composition, or function of habitats are compromised. An example of such a compromise might be fragmentation of large blocks of suitable habitat into smaller isolated blocks that separate small populations of wildlife species from each other. In managing forest ecosystems, biodiversity is evaluated at larger scales because the maintenance of functioning ecosystems will better conserve the species associated with them.

Prior to timber harvest, which began around 1954, the Project Area contained extensive amounts of unfragmented forest patches (blocks). Old-growth blocks have decreased in size and increased in frequency since that time, as timber harvest has resulted in fragmenting the larger blocks, and the total amount of old-growth forest has decreased. (Old-growth forest is discussed in more detail below.) Fragmentation of existing old growth results in a reduction in the effectiveness of remaining patches as wildlife habitat. Individual species respond to natural and human-induced fragmentation differently. Species like brown creepers and hairy woodpeckers can be supported by smaller patches of forest habitat than species such as deer and marten.

The connectivity, or habitat corridors, between habitat blocks in a landscape may be at least as significant to maintaining diversity as the size of the blocks (Noss 1983). Corridors can function in different ways, depending on width and other characteristics. Corridor width can be important: some "interior species" (species that do not inhabit the outer edges of old-growth forests) will not live in or even migrate through extensive lengths of unsuitable habitat (Forman and Gordon 1981). In the Project Area, connectivity along riparian areas, beach fringe, and between habitats at different elevations has been reduced by clearcutting within the watersheds. Prior to timber harvest activities, the main dispersal corridors throughout the Project Area were most likely along major creeks (Eagle and Luck Creeks) and near the beach.

Project Level Viability Analyses

Viability analyses were conducted at the Forest level and, based on those results a conservation strategy was presented in the Forest Plan for the Tongass National Forest. Although absolute certainty is impossible, the Forest Plan and the subsequent 1999 Record of Decision (ROD) established standards, guidelines, and land allocations to maintain viable and well-distributed populations of wildlife across the Tongass National Forest for 100 years. The strategy set forth by the Forest Plan, the 1999 ROD, and subsequent clarifications, establish the principal components of the conservation strategy. Stand level habitat protection measures, however, are recognized as opportunities to protect individuals and as an important conservation measure (TPIT 1998).

This project is located in the North Prince of Wales Biogeographic province. Specific measures were taken in the Forest Plan and 1999 ROD to maintain population viability within this province: 1) the size of the large and medium old-growth habitat reserves were enlarged above minimum requirements; 2) the reserves were specifically located to provide for connectivity from north to south (from Port Protection to Karta Wilderness) and east to west (from the Clarence Strait shoreline to Honker Divide); 3) specific standards and guidelines were added for goshawks and marten in this province to attempt to mitigate further fragmentation and provide habitat structure; and 4) the timber harvest rotation was extended to 200 years.

This project is consistent with the Forest Plan land allocations, standards, and guidelines. New information has not emerged since the Forest Plan revision was completed that would cast doubt on or significantly alter the original analysis. Within the 5-year timeframe of the mandated Forest Plan review and the commitment to review the old-growth strategy, new information should be available to conduct the review of population viability. During that review, conclusions may change. However, it is unlikely that before then (e.g. on an annual basis) any new information would be significant enough to modify the 100 year viability analysis conclusion.

Old-growth Forest

Old-growth forest contains trees of many ages, sizes, and conditions, including dead standing trees (snags) and trees with dead tops. Tree establishment largely depends on large woody debris (logs and stumps; Harmon 1986, Harmon and Franklin 1989) and gap formation (Alaback 1988). Woody debris provides microsites for seedlings to grow on, and gaps (openings) created by windthrow or other disturbances allow light to penetrate to the forest floor. The process of trees dying and being replaced is continuous; in any one year, a portion of the trees in individual stands is likely to blow down (Harris 1989). Thus, the forest is a mosaic of older and younger trees, dynamically changing yet remaining stable as a forested ecosystem (Bormann and Likens 1979, Alaback 1988, Schoen et al. 1988, Franklin 1990).

Old-growth forest is an important source of valuable forest products. All action alternatives propose harvesting old-growth forest. Old-growth forests are important to many people for aesthetic and cultural purposes. Large trees, characteristic of many old-growth stands, have become symbols of a "pristine" landscape.

Old-growth forest is also important as wildlife habitat for old-growth associated species such as Sitka black-tailed deer, martens, black bears, and Vancouver Canada geese, and cavity or snag-dependent species such as flying squirrels, woodpeckers, and owls. The combination of a dense canopy with scattered small openings (typically 20 to 40 feet across) allows forage to grow under the openings, while the large limbs within the canopy intercept enough snowfall to provide winter food and thermal cover for deer and other species. The large, dense stems also provide some measure of thermal insulation in the winter. Large dead or defective trees provide nesting sites for martens, owls, eagles, wrens and chickadees, as well as feeding sites for woodpeckers, sapsuckers, brown creepers, and others.

The value of old-growth forest for wildlife habitat transcends individual stands. Large, contiguous, unfragmented blocks of old-growth forest are important to forest interior species. Large old-growth blocks provide protection from predators, and promote genetic mixing among populations that would be less likely to breed if they were spatially separated by forest fragmentation. Deer use these large old-growth blocks for migration routes between winter and summer ranges. Additionally, these large, unfragmented blocks provide expansive hunting territories for predators.

Timber harvest of old-growth forest in the Project Area has occurred since about 1954. Table OG-1 displays information on the historic and existing amounts of old-growth forest in the Project Area. Old-growth forest is divided into productive and unproductive old-growth; productive old growth (POG) are the areas (stands) of old-growth forest containing enough tree volume per acre to be commercially harvestable, and also considered to provide the more important wildlife habitat. The last column of the table represents the commercial old-growth forest that will be remaining at the end of the first rotation in land use designations classified as unsuitable for timber management.

Table OG-1
Old-growth Forest Acres

POG (1954)	POG (1999)	POG (2154)
24,478*	14,540*	10,740

POG = productive old growth
* Includes suitable and unsuitable commercial forest land

Viable Populations and Old Growth

The NFMA regulations also include the concept of wildlife (vertebrate) species viability, requiring that fish and wildlife habitats be managed to maintain viable populations of species in the planning area (National Forest). A viable population is defined as one having "the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area" (36 CFR 219.19). Wildlife habitat planning and management for viable populations is carried out in the context of overall multiple-use objectives.

Viability is discussed here rather than in the Fisheries Resources and Wildlife sections due to the key role that old-growth forest habitat plays in maintaining viability across the Tongass National Forest. The Forest Plan includes, as the foundation of its viability strategy, a forest-wide system of old-growth habitat reserves (blocks) that maintain the integrity of the old-growth ecosystem.

Under the Forest Plan, project areas are not expected to independently maintain viable populations, however, project-level contributions to the Forest-wide strategy must be considered. This includes maintaining the integrity of Old-growth Habitat Land Use Designations, maintaining other components of the overall strategy (such as riparian management areas, the beach and estuary fringe, and species-specific habitats), and considering additional old-growth habitat and corridor needs within the project area.

While the Luck Lake Project Area neither contains nor is adjacent to any large or medium old-growth habitat reserves, a portion of its western boundary is adjacent to a non-development land use designation (Semi-remote Recreation), which is bordered by the Honker large old-growth habitat reserve. The Project Area contains three small reserves, one within each VCU, represented by the Old-growth Habitat Land Use Designation. The current locations of these reserves are displayed on the land use designation map in Chapter 1 and in Figures OG-1 and OG-2, and their acreages and old-growth characteristics are displayed in Table OG-2 . The Forest Plan requires a small old-growth habitat reserve be maintained in each VCU where larger reserves are not present (either under the Old-growth Habitat Land Use Designation or other non-development land use designations), and includes specific habitat criteria to follow in locating these reserves (Forest Plan, p. 4-120 and Appendix K). Although one small reserve, as required, is shown on the Forest Plan map, the plan allows boundary adjustments or relocations (within a VCU) of small reserves, as long as the habitat criteria are met. The proposed changes to small old-growth habitat reserves for the Luck Lake Project are discussed below under "Effects of the Alternatives".

Table OG-2
Small Old-growth Habitat Reserves as Currently Mapped

VCU	VCU Acres	Small Old-growth Habitat Reserve Acres	POG* in Reserve (acres)	Minimum POG required
572	5,662	960	500	453
581	20,047	3,841	1,581	1,604
582	4,060	521	341	325
583	12,497	1,623	962	1,010

* POG = productive old growth

The maintenance of habitat corridors is important to minimize isolation and decline of wildlife species associated with the old-growth blocks (Harris 1984, 1985; Hunter 1990). Riparian areas, the beach fringe, estuaries, and other areas (including stands deemed inoperable for timber harvest because of unstable soils, steep slopes, economic isolation, or other factors) can all provide connectivity between old-growth blocks. Timber harvesting (no longer allowed in these areas) occurred in the past within the beach, estuary, and riparian buffers in VCU's 572 and 581, and these areas all have gaps in connectivity. Over time, these sites will mature to again provide travel corridors for wildlife. A future old-growth habitat reserve strategy may include mature second-growth stands where they provide connectivity. The major beach fringe corridor east of Baird Peak, in VCU 582, remains intact.

Effects of the Alternatives

Effects of Alternatives on Old-growth Forest and Biodiversity

Following traditional clearcut logging of old-growth forest, the stands that subsequently develop are even-aged (Harris and Farr 1974) and tend to contain a higher percentage of Sitka spruce and a lower percentage of the cedars. Clearcutting differs from natural disturbances in that it represents a large-scale change (up to 100 acres, typically) rather than dispersed small (one to 20 acres, typically) partial blowdown patches. It also differs in that nearly all trees are felled, whereas in natural disturbances many trees remain standing or partially standing (Hansen et al. 1991).

Direct Effects

The harvest units for all Luck Lake action alternatives differ from traditional clearcutting, maintaining either 10 to 20 percent stand structure or 30 percent canopy closure for each unit. The Forest Plan specifies that VCU's, having previously undergone greater than 33 percent reduction of POG, will have 30 percent of the canopy cover retained in future timber harvest activity in that VCU. The retained trees may be in clumps or "islands" within a unit, or may be more evenly spaced. In either case, the actual opening created will be smaller than the unit size, and mature trees will remain as part of the unit. In VCU's that have undergone less than a 33 percent reduction in POG, 10-20 percent of original stand structure will be retained on acres of high-value marten habitat. Harvest units within VCU's 572 and 581 will retain 30 percent canopy closure, and all acres of high-value marten habitat in units within VCU 582 will retain 10-20 percent of the original stand structure. As a result of these silvicultural prescriptions, all Luck Lake harvest units will more closely mimic stand structures developing after natural disturbance than if even-aged clearcut harvested.

Table OG-3 displays the average unit size and number of units for each alternative. Alternative 2 has the lowest average unit size and comes closest to matching the sizes of openings created by natural disturbance. The combination of smaller unit size and fewer units for Alternative 2 would result in relatively better connectivity remaining than in the other action alternatives. Alternatives 4 and 6 have a slightly higher average unit size and would create more than twice the number of harvest openings as Alternative 2. Alternatives 3 and 5 have higher average unit sizes. Alternative 5 has the fewest units overall, and based on number of units would create the least fragmentation.

Table OG-3
Harvest Unit Size by Alternative

Alternative	Number of units	Average Unit Size (acres)
2	18	26
3	25	34
4	39	27
5	12	36
6	39	27

Indirect and Cumulative Effects

Table OG-1 portrays the amount of old-growth forest harvested to date within the Project Area, and gives an estimate of the productive old growth originally existing there. Table OG-4 separates harvest estimates for productive old growth by VCU and alternative. Comparing these two figures (for each VCU, and Project Area-wide) gives an indication of the cumulative reduction on the old-growth forest resource in the Project Area so far. VCU's 572 and 581 have relatively high percentages of cumulative harvest of productive old growth, high enough to invoke the Forest Plan standards and guidelines for the goshawk. VCU 582 has had no harvest to date.

Table OG-4 displays the anticipated harvest of productive old growth under each action alternative, by VCU and total for the Project Area. Alternative 1 (not shown) has no timber harvesting.

Table OG-4
Harvest Acres of POG by VCU by Alternative

VCU	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
572	102	247	311	163	311
581	359	596	617	263	617
582	0	0	110	0	110
Total	461	843	1,038	426	1,038

Table OG-5 displays the cumulative change (reduction) in Project Area high-volume old-growth forest, as a percentage of that existing in 1954. Percentage value includes both percent harvested to date (which is the same for all alternatives), and the percentage resulting from the additional harvest under each Luck Lake alternative.

Table OG-5
Cumulative Reductions in Project Area Old Growth:
Percentage of 1954 Productive Old-growth Forest Harvested

Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	As of 2154
41%	42%	44%	45%	42%	45%	56%

An analysis of cumulative effects must also include "reasonably foreseeable future actions" (40 CFR 1508.7). For the Luck Lake Project action alternatives, individual sale offerings are likely to occur over the next ten years, and harvest activities may extend beyond that time. These are the only projects being planned for this area at this time. In adjacent areas, the Control Lake Project Area extends into VCU 575, which borders VCU 581 for a short length along its western boundary; however, no units in this VCU were in the Control Lake Project's Selected Alternative. In addition, the 1999 Forest Plan Record of Decision converted the portion of VCU 575 that was Modified Landscape to Semi-remote Recreation, a non-development land use designation. Most of the Control Lake sales, and also the timber sales currently being planned in the Staney Creek area, are separated from the Luck Lake Project Area by the 160,000-acre Honker Divide Old-growth Habitat Land Use Designation.

To further address cumulative effects, projections of potential harvest in the Luck Lake Project Area over the next one hundred and fifty years (see Forest Plan Record of Decision) were made based on the assumption that the remaining suitable and available productive old growth will be harvested during that time. There are currently 3,800 acres of suitable productive old growth available for harvest scheduling (see Silviculture and Timber Management section of this chapter), of which the project alternatives would harvest between 426 and 1,038 acres. Assuming all suitable productive old growth is harvested by the year 2154, productive old-growth forest in the planning area would be reduced by 56 percent of what existed in 1954. Comparing this to the current percentage (Table OG-5), one can see that most of the reduction of productive old growth forest has already occurred. In addition, assuming future harvest would fall under the current Forest Plan standards and guidelines, future harvest would include partial cutting prescriptions, which will lessen the effects of harvest compared with the clearcutting practices done previously.

Effects Related to Viable Populations and Old Growth

As previously discussed, the Forest Plan includes a forest-wide habitat conservation strategy designed to ensure adequate habitat to maintain viable fish and wildlife populations. For the Luck Lake Project Area, the three small old-growth habitat reserves are the main components of the forest-wide habitat conservation system. In addition, all applicable Forest Plan standards and guidelines that are also integral parts of the strategy, such as riparian management areas, beach fringe protection, landscape connectivity, the 200-year rotation, and the goshawk and marten guidelines, are fully incorporated into the Luck Lake action alternatives. The 200-year rotation standard and guideline will provide better opportunity to plan and implement sales to leave a mosaic of seral stages that maintain or improve

connectivity between beach fringe, lowland, and upland habitats, as well as designated old-growth reserves (Forest Plan Record of Decision, page 45). Implementing the goshawk and marten standards and guidelines has resulted in two-aged harvest prescriptions in all proposed harvest units. After harvest, units will retain more structure than traditional clearcuts, resulting in better connectivity between the small, medium, and large old-growth habitat reserves.

The Forest Plan includes specific criteria for designing and locating small, medium, and large old-growth habitat reserves (Forest Plan, Appendix K). As discussed earlier, the small old-growth habitat reserves identified and mapped for the Forest Plan are anticipated to be reviewed during project-level planning, and are subject to change to improve their functioning in the overall reserve system. The small old-growth habitat reserves in the Project Area were reviewed during several interagency and interdisciplinary meetings. Low elevation habitat, for deer winter range and other values, was not represented in the original designations. The Forest Plan old-growth habitat reserve criteria include as a factor to consider in locating reserves: "Important deer winter range to maintain important deer habitat capability to meet public demand for use of the deer resource" (Forest Plan, p. K-1). Although past timber harvest precluded many opportunities for reserves in low elevation habitat, the changes proposed for the action alternatives more adequately considered concerns about the distribution and connectivity of this habitat.

The mapped locations of the three Project Area small old-growth habitat reserves are shown in Figures OG-1 and OG-2. No changes are proposed for the small reserve in VCU 572. The boundaries of the reserve in VCU 581, and boundaries and location of the reserve in VCU 582 and 583, are proposed for change to incorporate more low-elevation productive old growth. Thirty percent of the acreage allocated to VCU 583 was mapped in adjacent VCU 582 to better meet the need for low-elevation habitat within the small old-growth habitat reserve. The changes for Alternatives 2-5 are displayed on Figure OG-1, and the changes for Alternative 6 are displayed on Figure OG-2. Table OG-6 displays information on the habitat composition of the new reserves in comparison with the Forest Plan mapped versions.

Table OG-6
Comparison of Mapped Small Old-growth Habitat Reserves and Proposed Reserves

	VCU 572	VCU 581	VCU 582	VCU 583
Small Reserve Acres:				
Forest Plan (1997)	960	3,841	521	1,623
Required (min.)	906	3,208	650	2,020
Proposed Change (Alt. 2-5)	none	3,947	1,243	975
Proposed Change (Alt. 6)	none	3,250	823	805
POG* Acres:				
Forest Plan (1997)	500	1,581	341	962
Required (min.)	453	1,604	325	1,010
Proposed Change (Alt. 2-5)	none	2,190	987	664
Proposed Change (Alt. 6)	none	1,873	585	557

* POG = productive old growth

Comparison of Alternatives

Alternative 1 maintains current forest patch size and connectivity. Of the action alternatives, Alternative 5 maintains the most acreage in large old-growth patches. Alternative 2 avoids harvest in low elevation habitat (<1,200 feet). Alternatives 4 and 6 comprise the most fragmentation (resulting in smaller patches) and greater harvest of old-growth forest. Alternative 3 exhibits similar effects to Alternatives 4 and 6, but comprises less road construction and less fragmentation of existing blocks. The proposed small old-growth habitat reserves in VCU's 581, 582, and 583 are located to exclude the Transportation/Utility Systems Land Use Designation (shown as the state road corridor in Chapter 1, Figure 1-2) in Alternative 6, resulting in fewer acres than the reserves proposed for Alternatives 2 through 5.

Figure OG-1
Luck Lake Project Area Old-growth Habitat Reserves, Alternatives 2-5

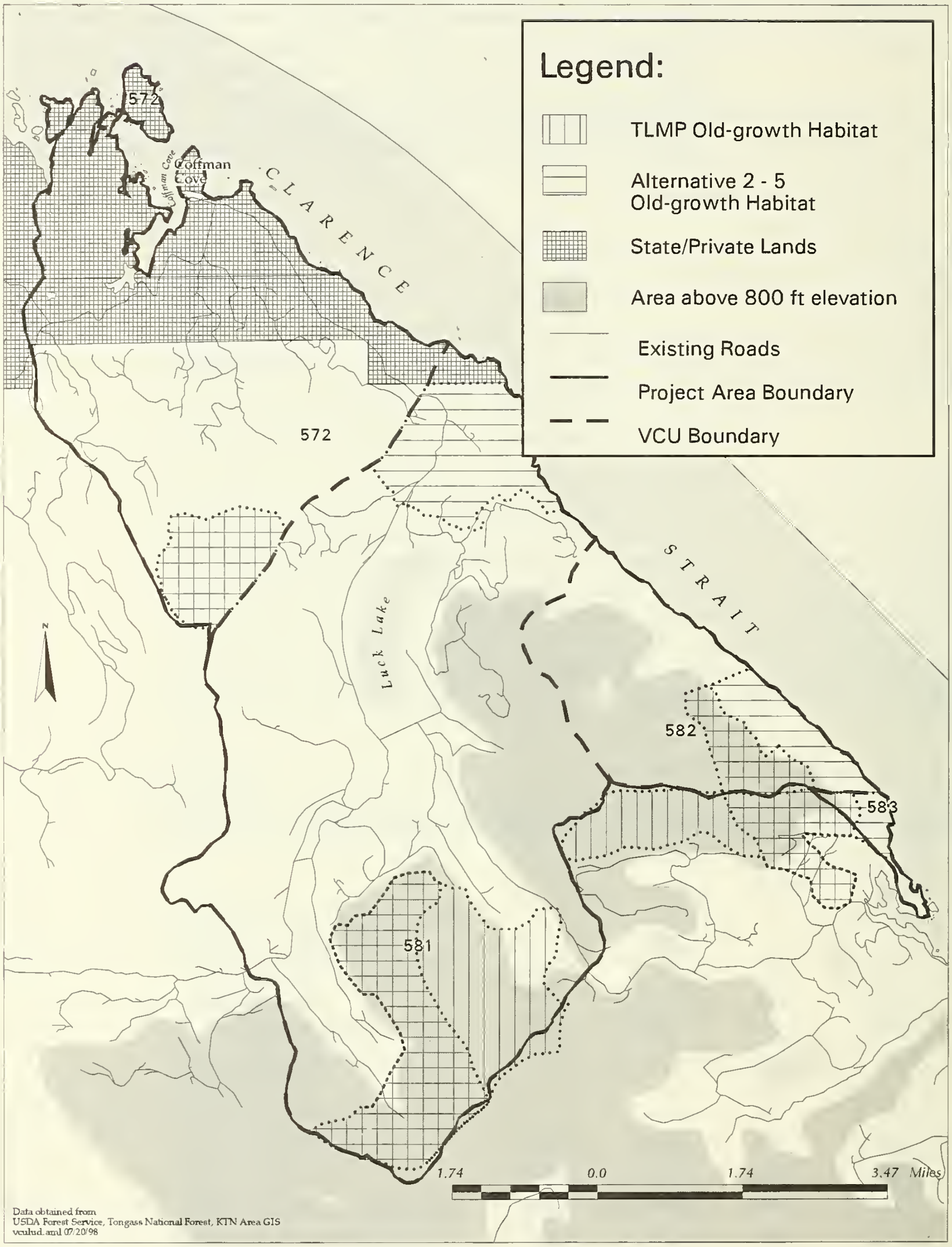
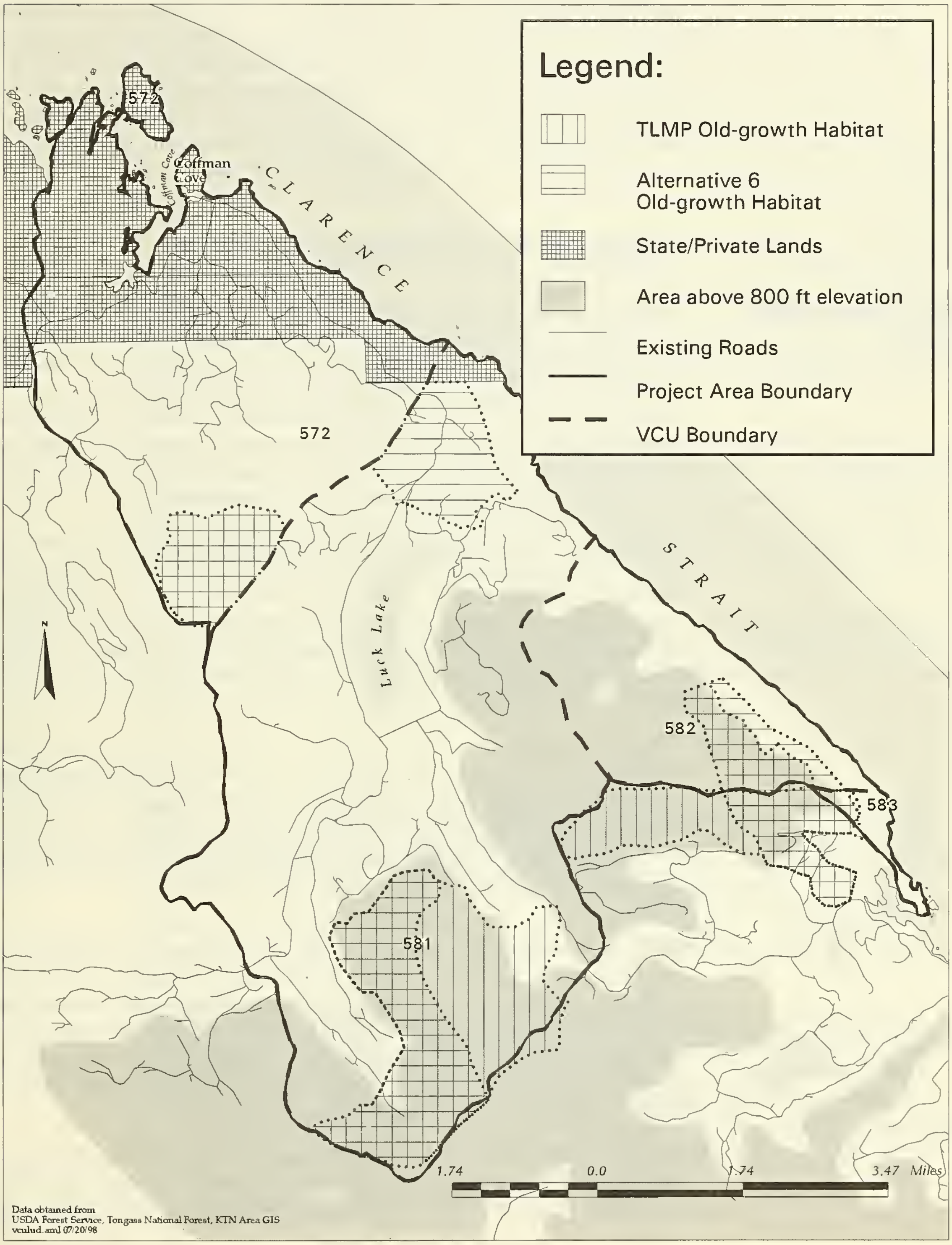


Figure OG-2
Luck Lake Project Area Old-growth Habitat Reserves, Alternative 6



Fisheries Resources

The following descriptions and analyses are summarized from the Fisheries Resource Report and the Watershed Analysis for the Luck Lake Project Area. A related analysis of fisheries is contained in the Forest Plan FEIS, Chapter 3. Applicable fisheries and riparian direction is contained in the Forest Plan, Chapter 4 (Forest-wide standards and guidelines), and Appendices D and J. For site-specific implementation requirements for all proposed units and roads, see Appendices B and C of the Luck Lake Draft EIS. Implementation requirements specific to the units and roads in Selected Alternative can be found in Appendices 2 and 3 of the Luck Lake Record of Decision.

Affected Environment

Fish Species and Uses

Project Area streams contain important anadromous and resident fish habitats. The streams support four species of anadromous salmon (pink, chum, sockeye, and coho), as well as anadromous coastal cutthroat trout, rainbow trout (steelhead), and Dolly Varden char. The Project Area also supports populations of resident coastal cutthroat trout, rainbow trout, Dolly Varden char, and non-game fish species such as sculpin and stickleback. Chinook salmon are present in the inlets and bays of the Project Area, but do not spawn in its streams. These fish species are important to the subsistence, sport, and commercial fisheries of the region, and are a major food source for many wildlife species.

Subsistence use of fish species within the Luck Lake Project Area is low compared to nearby stream systems such as Hatchery Creek and Sarkar Lakes. Conversely, sportfish use is high within the Luck Creek/Luck Lake/Eagle Creek stream system. The target species are primarily coho salmon, steelhead, coastal cutthroat trout, and Dolly Varden char. The Luck Lake watershed is listed by Alaska Department of Fish and Game (ADF&G) as a high quality sportfishing stream for coastal cutthroat trout and a primary sportfish producer on the Tongass National Forest.

Streams within the area also contribute to the commercial fisheries of the Southeast Alaska. ADF&G lists VCU's 572, 581, and 582 as being secondary producers of salmon production on the Tongass National Forest. The Luck Creek/Luck Lake/Eagle Creek stream system has the highest escapement (fish returning from salt to fresh water) of pink, chum, sockeye, and coho salmon within the Project Area. Chum Creek and Coffman Creek are also important in providing pink salmon and minor amounts of chum and coho salmon to the commercial fishery.

Eagle Creek is a constant "hotspot" for poaching and sportfish regulations violations. Steelhead are the species most affected. Most of the violations involve keeping undersize steelhead and using bait. Steelhead populations in Southeast Alaska have generally declined over the last decade prompting ADF&G to require catch-and-release regulations on steelhead less than 36 inches in total length. Due to the decline in steelhead and the sportfish violations, ADF&G closed the entire Luck Lake drainage, which includes Eagle Creek, to sportfishing from March 6 to June 15, 1999.

Sockeye salmon from the Luck Lake drainage have been noted as being somewhat "unique" among the sockeye salmon stocks of Southeast Alaska. A reverse sexual size dimorphism has been found in this stock, with females generally longer in length than males.

No federally listed threatened, endangered, or sensitive fish species are known to occur in streams within the Project Area. However, some fish stocks of federally listed salmon from the lower-48 of the United States may be migrating past the Project Area in the saltwater of Clarence Strait.

Fish Habitat

Fish habitat can be described in several ways, including: watershed description, stream classification, and stream process group (channel type). Watersheds are areas that collect and discharge runoff through a given point on a stream. The Luck Lake Project Area includes 18 separate watersheds (with the Luck Creek/Luck Lake/Eagle Creek system considered one watershed), but over half of the Project Area is located in three watersheds, Coffman Creek, Chum Creek, and the combined Luck Creek/Luck Lake/Eagle Creek stream systems. These three watersheds contain about 75 percent of the Project Area's fish habitat.

A detailed Watershed Analysis for the Luck Lake Project Area is contained in the planning record. A sediment risk model was run on all the watersheds. This model indicates that the watersheds with the highest risk of adverse effects from upstream sediment are the Luck Creek/Luck Lake/Eagle Creek watershed and Coffman Creek watershed. The lower reach of Luck Creek, near where the stream enters Luck Lake, is considered a high-density fish habitat area. Spawning habitat has been identified for both coho and sockeye salmon, and may also exist for steelhead.

There are approximately 176 miles of streams in the Project Area. Of these, 43.5 miles are classified as Class I streams (streams providing anadromous and adfluvial fish habitat), and 22.7 miles are Class II (providing resident fish habitat). The remaining streams do not provide fish habitat, but can affect fish streams: Class III streams (93.3 miles) are those having an immediate influence on downstream fish habitat, and Class IV streams (16.7 miles) account for the rest.

Concern over fish habitat in the "Luck Lake drainage" (the Luck Creek/Luck Lake/Eagle Creek watershed) is an aspect of one of the project issues. This watershed alone contains the majority of the Class I and II streams in the Project Area. The Luck Lake drainage is further discussed in the Water section of this chapter and the Watershed Analysis.

There are 620 acres of lake habitat in the Project Area, with Luck Lake itself comprising 531 acres (Class I).

Streams and lakes can be stratified into different stream process groups. Stream process groups are based on physical characteristics of streams and describe the interrelationship between watershed runoff, topography, geology, and other influences on stream erosion and deposition. They are also an indicator of the amount and quality of fish habitat within a stream, and can allow the prediction of the physical responses of streams to different management activities. Stream process groups are discussed further in Appendix D of the Forest Plan.

The following stream process groups are found within the Project Area - alluvial fan (9.7 miles), estuarine (2.8 miles), floodplain (10.3 miles), high gradient contained (131.2 miles), large contained (1.4 miles), moderate gradient contained (1.8 miles), moderate gradient mixed control (15.7 miles), and palustrine (3.3 miles). The majority of Class I habitat is found in moderate gradient mixed control, floodplain, and alluvial fan process groups. The majority of Class II habitat is found in the high gradient contained process group.

Existing Harvested Areas and Road Crossings

Timber harvest and roads are typically the forest management activities with the highest potential to adversely affect fisheries habitats. Approximately 9,900 acres of the Luck Lake Project Area were harvested between 1955 and 1997. Prior to 1990 trees were harvested to the streambank of fish-bearing streams in several locations. Of approximately 6,800 acres of riparian area within the Project Area, about 2,200 acres have been harvested. Harvest has occurred on approximately twenty-five percent of the total stream mileage. Approximately half of this harvest is on Class I and II streams. The majority of this riparian harvest has occurred in the Luck Lake drainage.

The roads within the Luck Lake Project Area include 290 existing stream crossings, 56 of which cross Class I streams, and 37 crossings on Class II streams.

Environmental Consequences

Timber harvest activities have the potential to affect fisheries resources by altering fish habitat. Logging and associated road building can affect fisheries resources by changing the delivery of water, sediment, and input of large woody debris into the stream system. Changes of the input and transport of these components can adversely affect the capability of the stream habitat to produce fish. The closer the timber harvest activities are to a stream, the higher the risk of adversely affecting fish habitat.

Fish Habitat Protection Standards (Mitigation)

The National Forest Management Act implementing regulations prohibit any activities near streams that would seriously and adversely affect fish habitat (36 CFR 219.27 (e)). In addition, the Tongass Timber Reform Act of 1990 requires a no-harvest buffer zone of at least 100 feet on each side of all Class I streams, and all Class II streams that flow directly into Class I streams (section 103 (a)).

The Forest Plan Riparian standards and guidelines incorporate this direction and provide additional protections. The Riparian standards and guidelines require no-harvest buffers along all Class I, II, and III streams, based on stream process groups and a defined Riparian Management Area, and provide guidelines for management beyond the no-harvest zone to provide for a reasonable assurance of windfirmness. Finally, Best Management Practices (BMP's) are designed to ensure compliance with the Clean Water Act and help protect riparian habitat on streams or portions of streams not protected by buffer zones. In order to minimize the potential for adverse impacts on soil and water resources by management activities, BMP's are used to directly or indirectly protect water quality from non-point source pollution. This is typically done through site-specific prescriptions. BMP's are discussed further in Appendix C of the Forest Plan.

The results of the Luck Lake Watershed Analysis were used in the design of harvest units. Areas indicating high risk were avoided. No modifications to Class III buffers resulted from this analysis. If additional streams are found during project layout, the same standards and guidelines will be applied. Future monitoring will focus on the effectiveness and adequacy of buffer prescriptions.

Effects of Alternatives

Forest Plan standards and guidelines, BMP's, and project designed mitigation included in road and unit cards have been used to avoid or minimize adverse effects to the Project Area fisheries resource; minimal effects to fisheries resources are anticipated.

The following discussions address the potential risk that unforeseen effects may still occur. It should be emphasized that this is only an indication of relative risk; we do not anticipate any significant adverse effects to occur.

Roads and Stream Crossings

Road construction and use often pose the greatest potential risk to riparian resources and fish habitat capabilities. Road construction, under all action alternatives, requires crossing streams to access timber harvest units. Roads can affect fish habitat through the introduction of fine sediment, increased landslide potential due to road location and design, and re-routing of sediment-laden water. Road construction also has the potential to affect upstream fish passage through improper placement or sizing of culverts.

The total number of new stream crossings required by alternative are: Alternative 1 - 0; Alternative 2 - 7; Alternative 3 - 11; Alternative 4 - 16; Alternative 5 - 4; and Alternative 6 - 16. Under no alternative are there new crossings to Class I or II streams. New road construction only crosses Class III and IV streams. Alternatives 4 and 6 propose the most new road construction, 12.3 miles of specified road and 1.6 miles of temporary road. Alternative 5 proposes 4.3 miles of new specified road construction and 1.0 mile of temporary road, Alternative 2 proposes 3.9 miles of new specified road construction and 0.9 mile of temporary road, and Alternative 3 proposes 2.3 miles of new specified road construction and 0.8 mile of temporary road.

The access management plan, proposed for the Luck Lake Project, identifies that all new roads will be placed in storage after timber sale activities are complete. In addition, a number of existing roads are proposed for storage to mitigate effects to fish and water resources (see Tables Transportation-3 and Transportation-5).

Timber Harvest

Removal of riparian vegetation through timber harvest can affect fish habitat and fish populations by increasing sediment inputs into streams, changing stream temperature and dissolved oxygen levels, changing the input of large woody debris, and altering the delivery of water to streams. No riparian area harvest is proposed along any Class I, II, or III streams under any alternative. The loss of trees within riparian areas is possible, due to future windthrow; however, significant adverse effects to fish habitats or populations are not anticipated. Alternatives 4 and 6 have the most harvest (1,038 acres), Alternative 3 harvests 843 acres, Alternative 2 harvests 461 acres, and Alternative 5 harvests 426 acres.

Timber harvest will remove riparian vegetation to the streambank along Class IV streams included in harvest units. These are non-fish-bearing streams, and water flows can be perennial, intermittent, or ephemeral. BMP's are applied to these streams, and they may also receive additional protection in the form of full suspension over the stream, directional felling, or split yarding, based on the physical characteristics of the stream and the need to protect streambank integrity. Some Class IV streams, or segments thereof, are located within no-harvest riparian management areas and windfirm buffers, and therefore receive the full protection of these buffers. The miles of unbuffered Class IV streams by alternative are: Alternative 2 - 1.4 miles; Alternative 3 - 3.3 miles; Alternative 4 - 3.7 miles; Alternative 5 - 1.3 miles; and Alternative 6 - 3.7 miles.

Even under the best of conditions, both road construction and timber harvest will inevitably introduce some sediment into streams under any alternative. Alternatives with the most harvest and roading would have the greatest potential for impacts to fish and fish habitat. Therefore, Alternatives 4 and 6 have the greatest potential for impacts to fish and fish habitat due to the most harvest, new road construction, and new stream crossings. Alternative 3 has the third highest harvest and the least amount of new road construction, but more new stream crossings than Alternatives 2 and 5. Alternatives 2 and 5 are similar in amount of harvest, new road construction, and number of new stream crossings. However, Alternative 5 has the least potential impact to fish and fish habitat, other than Alternative 1, as less harvest takes place in the Luck Lake Drainage, which has had the most previous harvest in the Project Area.

Cumulative Effects

Cumulative effects result from the incremental effects of actions, when added to other past, present, and reasonably foreseeable future actions. A general discussion of cumulative effects to fisheries resources is presented in Chapter 3 of the Forest Plan FEIS. An Anadromous Fish Habitat Assessment (AFHA) Panel, made up of fisheries biologists and hydrologists, analyzed effects to Tongass fisheries resources for the Forest Plan. The Forest Plan Record of Decision (page 30) states that the standards and guidelines and other direction approved by the Regional Forester meet or exceed the recommendations of the AFHA panel. Standards and guidelines are sufficient to protect fish habitat and provide for sport and commercial fisheries and subsistence. In addition, the 200-year rotation will reduce activity levels in upland sites, reducing the risk to fisheries and riparian resource. Another panel was formed that worked directly on the Forest Plan. The panelist opinions and predicted outcomes from the Forest Plan FEIS (pages 3-56 to 3-73), applicable to the Luck Lake Project, are discussed below.

The panel judged that watersheds already heavily disturbed by previous management would not be recovered in 100 years. The panelists agreed that, even with the highest level of riparian protection, the risk of impacts on fish could still be relatively high in heavily impacted watersheds, due to cumulative effects. The Luck Lake Watershed Analysis identifies loss of fish habitat and removal of future sources of large woody debris resulting from past harvest to streambank. Previously harvested riparian areas in the Project Area will likely take at least 100 years to return to pre-harvest conditions. In addition, riparian buffers may be subject to potential blowdown. The risk of blowdown decreases as buffer width increases.

The lower portions of Coffman Creek, Chum Creek, and a few small, unnamed watersheds with fish streams are located on State and private lands. In past years, riparian harvest to the streambanks of fish bearing streams has taken place. Possible future timber harvest on these lands has the risk of potential detrimental effects on fish and fish habitat, due to cumulative effects of past harvest and roading.

The panel also assumed that more roads would be located at higher elevations on less stable terrain and harvest would occur on less stable areas when compared to historical road location and harvest. This could result in a greater likelihood of hillslope failure, erosion of fine sediment from road surfaces, and capture and rerouting of natural drainage. Most of the harvested land in the Project Area has been from the valley bottoms up to mid-slope. The remaining suitable commercial forest lands in the Project Area are located from mid-slope to ridge top. While mitigation measures reduce the likelihood of significant degradation of fish habitat, future harvest management activities may still impact fisheries resources.

Approximately 3,800 acres of suitable and available commercial forest land is scheduled to be harvested by 2154, the end of the 200-year rotation. Again, mitigation measures reduce the likelihood of significant degradation of fish habitat, however future harvest management activities may still impact fisheries resources.

While some fish habitat has been lost in the Project Area due to past timber harvest activities, factors other than timber harvest also contribute to declining fish populations. Oceanographic conditions, ocean survival, commercial fish harvest and bycatch, and sportfish harvest all take a major toll on fish populations before fish can return to their natal streams. Based on ADF&G records, subsistence use of fish resources appears to be low within the Project Area. Subsistence use of fish species is not expected to increase in the Project Area unless nearby stream systems like Hatchery Creek and Sarkar Lakes have harvest limits significantly reduced or are closed to subsistence/personal use fishing altogether.

The proposed Federal Highways Coffman Road Project, which is planned to take place over the next 6 to 10 years, may pose some risk to fish habitat and fish populations. This project proposes to reconstruct the existing roadway between Forest Road 20 and Coffman Cove. Both the proposed Sweetwater and Luck Lake routes cross fish streams in the Luck Lake Project Area. Whichever route is chosen, the existing road will be realigned to within 148 feet of the current location and widened from 16 feet (current) to 24 feet (including shoulders). This project will include installing and replacing culverts and bridges, completing cut and fill slope work, and dredging and filling in wetlands. These activities may affect fish habitat and introduce sediment into streams.

Finally, the City of Coffman Cove is working with the Prince of Wales Hatchery Association on a project to raise chinook salmon in nets pens and release the salmon into Coffman Cove Bay. The chinook salmon may stray into streams in the Coffman Cove area. In this event, the chinook may compete for the food, rearing habitat, and spawning habitat of existing fish populations.

Karst Resources and Geology

The following discussions and analysis are based on and summarized from the Geology, Minerals and Karst Resources Report for the Luck Lake Project Area (1998). Karst resources are also analyzed in the Forest Plan FEIS, Chapter 3. Direction for the management of karst resources is included in the Forest Plan, Chapter 3 (Management Prescriptions), Chapter 4 (Forest-wide Standards and Guidelines), and Appendix I.

Affected Environment

Geomorphology and Geology

The Luck Lake Project Area lies within the Baird Peak Geomorphic Area, which lies between the Thorne River/Hatchery Creek drainages to the west and Clarence Strait to the east. The topography and landforms are characterized by broad ridges trending northwest-southeast from Baird Peak, the highest feature of the geomorphic area at 3,064 feet above sea level, and small U-shaped valleys. Soils are dominantly well drained and productive on the valley side slopes and in the valley bottoms supporting hemlock/spruce forests. The broad ridgetops are covered with organic soils supporting bog vegetation.

The Project Area is predominately underlain by Silurian and Ordovician age sedimentary and volcanic rocks of the Alexander Terrain. The sedimentary and volcanic rocks found here seem to be slightly metamorphosed and are intruded by Cretaceous granodiorite along the southeastern project boundary. The dominant rock types are andesites, basalts, and granodiorites in the higher elevations and southern portions of the area, and grawacke, siltstone, mudstone, sedimentary breccia, and limestone in the northern lower elevations (Brew, 1996). Marble is found on the northwestern flanks of Baird Peak. This marble is thin bedded, blue and white banded, and steeply dipping. Karst landforms and drainage systems have developed within the marble outcrops. Rock units have been offset by major northwest-southeast trending faults, moving the blocks to their present location where they have been subsequently glaciated, weathered, and eroded.

Karst Resources

Karst is a comprehensive term that applies to the unique topography, surface and subsurface drainage systems, and landforms that develop by the action of water on soluble rock; in the case of Southeast Alaska, limestone and marble. The dissolution of the rock results in the development of internal drainage, producing sinking streams, closed depressions, and other solutional landforms such as sinkholes, collapse channels and caves (White et al. 1995).

The geology and climate of Southeast Alaska are particularly favorable for karst development. Extensive areas of very pure carbonate, approximately 515,000 thousand acres, are found within the boundaries of the Tongass National Forest. Because of the highly fractured nature of the carbonates, high annual precipitation, and the peatlands proximal to the carbonate bedrock, karst has developed to one extent or another within all carbonate blocks. The Tongass contains the largest concentration of dissolution caves known in Alaska.

Karst resources are well developed within the carbonates of the Project Area. Drainages disappear along the margins of the faulted marble blocks, and sinkholes and other collapse features are numerous across the surface of the karst plateaus. There are 112 acres of karst land in the Project Area; timber harvesting has occurred on 35 of these acres.

Karst Management

Karst lands impose land management challenges not encountered in non-karst areas because the three-dimensional landform of karst lands functions differently than other landforms. Recognizing these differences, the Tongass National Forest has incorporated karst management standards and guidelines into the Forest Plan (pp. 4-18 to 4-20, and Appendix I). These provide for other land uses while taking into account the function and biological significance of the karst and cave resources within the landscape.

The Karst and Caves Forest-wide standards and guidelines categorize karst areas as to their vulnerability for being adversely affected by management activities. Vulnerability mapping utilizes the fact that some parts of a karst landscape are more sensitive than others to planned land uses. The differences in vulnerability or sensitivity of a particular system are typically a function of the extent of karst development, the openness of the karst system, and the sensitivity of other resources that benefit from the karst ground water systems. High vulnerability karst land is considered unsuitable for timber management and is removed from the suitable land base. Moderate vulnerability lands are available for timber harvest, with some limitations on harvest systems and methods (see Mitigation discussion at end of this section). Low vulnerability karst lands have no karst-specific management restrictions.

The Forest geologist mapped the carbonate outcrops within the Project Area; prior mapping by the US Geologic Survey did not identify carbonates in the area. The Forest geologist, two other karst management specialists, and the soil scientist inventoried the harvest units planned on top of or adjacent to the carbonates. The results of this inventory can be found in this document and the planning record. Members of the Glacier Grotto and the Tongass Cave Project mapped significant karst features and caves within the area. Based on these inventories, areas of high vulnerability karst were identified and removed from consideration for timber harvest and the drainages that feed these areas were protected. The karst resource assessment determined that the remaining moderate and low vulnerability areas would be suitable for timber harvest given the proposed partial harvest and requiring a logging system that can achieve partial suspension.

Environmental Consequences

Effects on Karst Resources

Any surface management activity on a karst landscape is likely to affect the components of that landscape to some extent. Surface landforms and surface water hydrology would most obviously be affected; however, the direct link between surface water and subsurface drainage implies that karst hydrologic systems and cave ecosystems could also be affected. A more detailed overview of potential effects to karst resources is contained in the Tongass Forest Plan, Appendix I, Karst and Caves, pages I-1 to I-22.

Water enters the karst systems by either "discrete" or "diffuse" recharge. Discrete recharge being from losing or sinking streams and diffuse recharge being through the forest floor and the epikarst. Threats to the karst systems, caves, and associated resources from timber harvest and road building include changes in hydrology, infiltration rates, sediment production, debris transport, pollutants, and introduction of organics which can lead to oxygen depletion. Research suggests that the forest canopy intercepts at least 20 percent of the annual precipitation. Therefore, clearcutting of the forest atop the internally drained karst lands increases annual diffuse recharge by at least 20 percent. Two-aged harvest, reduced harvest unit size, logging systems that achieve at least partial suspension, and longer metering of the acres harvested per decade within a given karst watershed as a result of the 200-year rotation should lessen the effects of increased infiltration.

Under the Forest Plan standards and guidelines, no harvest will occur on high vulnerability karst lands. From the original unit pool for the Luck Lake Project Area, several units were dropped and others modified to protect high vulnerability karst areas. The drainages that lose into the identified karst systems were protected. The remaining acres of karst on which timber harvest is proposed can be characterized as moderate vulnerability karst lands.

With protection of the high vulnerability karst areas, the losing streams, and their drainages, little chance exists for sediment or organic material to enter the karst hydrologic systems of the Project Area. The epikarst is moderately developed to well developed and is sometimes visible at the surface. The soils are a mosaic of shallow organic soils and mineral soils and glacial till. The mineral and glacial soils infill or cover the epikarst channels. Since the soil mantles or fills the epikarst channels, there should be little opportunity to move sediment and debris vertically into the karst hydrologic systems beneath if soil disturbance is minimized. Partial suspension logging systems are required on karst lands to minimize soil disturbance.

In the reasonably foreseeable future, and if the retained trees in the selected units remain windfirm, there should be few threats to the karst systems, features, and caves within the Project Area. All future harvest (during the current 200-year rotation) will also exclude lands determined to be of high vulnerability to the karst systems and resources. By excluding the high vulnerability karstlands and the small drainages feeding them from consideration for harvest and roading, the systems should, for practical purposes, remain in a natural state.

Table K-1 displays by action alternative the acres of proposed harvest on karst lands. As noted earlier, 35 of the 112 acres (31 percent) of the karst in the Project Area have already been harvested. Alternatives 2 and 3 each propose harvest on 25 acres of karst, Alternatives 4 and 6 on 28 acres, and Alternative 5 on 12 acres. These areas are all low to moderate vulnerability karst areas. The areas proposed for harvest will be partial cut, not clearcut as in the past. Partial suspension logging systems and other specific measures will be required (see Mitigation), and no adverse effects to karst ecosystems are anticipated. Cumulatively, the percentage of total karst in a harvested condition from past and proposed timber management would be 41 to 54 percent under Alternatives 2, 3, and 5, and 56 percent under Alternatives 4 and 6.

Table K-1 also displays by action alternative the miles of new road construction atop karst needed to access harvest units. This ranges from about one-tenth mile in Alternatives 2, 3 and 5 to four-tenths mile in Alternatives 4 and 6. As previously mentioned, none of the harvest is on high vulnerability karst and no proposed roads cross high vulnerability karstlands.

Table K-1
Effects of the Alternatives on Karst Lands

	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Acres of Harvest on Karst	25	25	28	12	28
Cumulative Percent of Project Area Karst Harvested*	54%	54%	56%	42%	56%
Miles of New Road on Karst	0.08	0.08	0.43	0.08	0.43
Cumulative Miles of Road on Karst*	0.75	0.75	1.10	0.75	1.10

*From this and previous NEPA project activities.

Mitigation

High vulnerability karst is removed from the suitable timber base; low vulnerability karst does not require specific practices other than what are normally applied (see Soil and Water sections of this chapter). Summarized here are mitigations to be applied to moderate vulnerability karst. See the Forest Plan (pp. 4-18 to 4-20, and Appendix I) for the full set of karst standards and guidelines to be applied. These are also specified on the unit and road cards (Appendices B and C in the Draft EIS and in Appendices 2 and 3 of the ROD for the Selected Alternative); the need for some requirements will be determined during project layout.

Implementation of the current standards was intended to consider the function of karst systems rather than on individual features. In the past, individual features have been the focus of applied mitigation. Mitigation for this Project was designed to remove the entire block of high vulnerability karst from harvest consideration, including the drainages that lose into them. In the moderate and low vulnerability areas, to protect the fragile soils, at a minimum the yarding system selected will be required to achieve partial suspension. Losing streams are protected. The proposed partial harvest should lessen the effects of loss of interception in the forest canopy. Existing roads and quarries will be used if possible in preference to the construction of new ones. No quarry shall be developed atop karst without adequate site survey and design. Roads shall avoid sinkholes and other collapse features. At no time shall roads divert water to or from karst features. Measures shall be taken to reduce erosion and sediment transport from the road surface and cutslopes. Additional design criteria may be required relating to road construction methods, blasting, culvert placement and density, sediment retention, and erosion prevention.

Recreation

The following discussions and analysis are based on the Scenic Quality and Recreation Effects Analysis Report for the Luck Lake Project Area (1998). The Tongass' recreation and roadless area resources are discussed in considerable detail in the Forest Plan FEIS, Chapter 3. Applicable direction from the Forest Plan is contained in Chapter 3 (Modified Landscape Land Use Designation) and Chapter 4 (Forest-wide Standards and Guidelines). See also the Scenery section of this chapter.

Affected Environment

Most recreation occurring in the Project Area is land-based and accessible by road or trail. The only saltwater-based access point (other than through the community of Coffman Cove) is just south of the Project Area at Big Ratz Harbor. One developed recreation site at Luck Lake is currently maintained for day-use activities and freshwater recreation opportunities. Most recreation use within the Project Area is restricted to Luck Lake and Eagle Creek and is in the form of fishing, swimming, and boating. Upland recreation is mainly hunting and hiking in the alpine areas west of Luck Lake and on Baird Peak.

Recreation Places

Recreation places are areas where recreation is occurring or is likely to occur. These can include trails, picnic areas, shelter sites, trailheads, roadless areas, and anchorages. The Project Area currently has three identified recreation places: the Luck Lake picnic area, Eagle Creek trail and trailhead, and the Ratz roadless area. The Ratz roadless area (also referred to as the Baird Peak area) will be discussed in the "Roadless Areas" sub-section. The Big Ratz Harbor anchorage lies just south of the Project Area; no project activities are proposed in that portion of the area and it is not included in this analysis. Two potential recreation sites are a trail, trailhead, and shelter at Baird Peak, and a Canyon Spur trail, trailhead, and shelter near Eagle Creek.

Eagle Creek Trail and Trailhead

The trail and the trailhead are presently in an unmodified condition and are not directly affected by past timber harvesting. Views along some portions of the trail are modified. The bank of Eagle Creek opposite the trail was harvested in the past, but young growth now covers most evidence of past harvest. This recreation place has a Recreation Opportunity Spectrum (ROS) of Roaded Modified

Luck Lake Picnic Area

The setting of the road entering this recreation site has been heavily modified by timber harvest. Most of the timber has been removed from the site itself, with the exception of a small fringe of trees along the shore of Luck Lake. Regrowth is significant enough to cover most evidence of past harvest. This recreation place has a ROS of Roaded Modified.

Baird Peak Trail, Trailhead, and Shelter

The trailhead lies within a 15-year-old timber harvest unit adjacent to a logging road. The proposed trail would traverse thin strips of old-growth forest and alpine to the lakes at the base of Baird Peak. Proposed shelter sites lie within an unmodified environment on the shore of these lakes. The proposed trailhead and first 1000 feet of trail are in an area with a ROS of Roaded Modified. The remaining trail corridor and potential shelter sites are in an area with a ROS of Roaded Natural.

Canyon Spur Trail, Trailhead, and Shelter

This future shelter location is accessed from a trailhead on Canyon Spur (near Eagle Creek). The sites and sounds of timber harvest would affect the trailhead and the first 500 feet of trail, where the ROS is Roaded Modified. The rest of the trail and the shelter location would be in a more natural setting, where the ROS is currently Roaded Natural.

Roadless Areas

The Forest Plan FEIS identified roadless areas that meet the minimum criteria for potential inclusion in the National Wilderness Preservation System. Once an area is roaded, it is generally no longer available for Wilderness consideration. The Forest Plan Record of Decision designated about 90 percent of the roadless areas in the Tongass National Forest in non-development land use designations.

According to the Forest Plan, roadless areas identified in the inventory, which are outside of existing designated Wilderness, may be considered for Wilderness recommendation, or may be managed for a wide range of other resource management activities. Identifying this potential does not imply that areas should or should not be recommended for designation as Wilderness, but is intended to portray the remaining undeveloped portions of the National Forest for which recommendation as Wilderness is a future option. The Forest Service can only recommend an area for Wilderness; only an act of Congress can designate an area for inclusion in the National Wilderness Preservation System.

The minimum criteria for considering a roadless area in the evaluation for Wilderness potential were established by the Wilderness Act of 1964 and subsequent policies. To qualify as a Congressionally-designated Wilderness, an area must contain at least 5,000 acres of undeveloped land that does not contain roads maintained for passenger-type vehicles. However, an area consisting of less than 5,000 acres of undeveloped land may qualify if it can be managed in a natural condition and is a self-contained ecosystem, contiguous to a Wilderness, or is ecologically isolated by topography.

Ratz Inventoried Roadless Area

The Ratz roadless area (# 512) is located in the southeast portion of the Project Area, between the Luck Lake watershed and Big Ratz Harbor (see Figure Recreation-1). It is also referred to as the Baird Peak area. Within the Luck Lake Project area, it includes the following land use designations: Old-growth Habitat (557 acres) and Modified Landscape (3,737 acres). The area is characterized by very rugged terrain except for the uplands west of Ratz Harbor where the topography is flat wetlands and muskeg. The area is 5,184 acres in size, with 4,294 acres inside the Project Area. It is bounded by roads and timber harvest units on three sides, and saltwater to the east. The major scenic features are the diverse alpine terrain and small lakes near the summit of Baird Peak. Local people use the area lightly for recreation and subsistence. This area also provides a large block of unaltered habitat for many wildlife species. The Ratz roadless area has been unaltered by human activity, but due to the extensive timber harvest around the periphery the natural integrity is fair. Except when active logging occurs, opportunities for solitude are good.

Thorne River Inventoried Roadless Area

A small part of the Thorne River roadless area (#511) is located in the southwest portion of the Project Area in VCU 581 (see Figure Recreation-1). This part of the Thorne River roadless area includes the following land use designations: Old-growth Habitat (2,690 acres), Timber Production (15 acres), Modified Landscape (359 acres) and Semi-remote Recreation (38 acres). The entire roadless area is 74,372 acres, with 3,102 acres located within the Project Area. The Thorne River roadless area includes 21,357 acres of suitable forest land, with two (2) suitable acres inside the Luck Lake Project Area. The major resources of the roadless area are located outside of the Project Area. Opportunities for solitude are very

good for this roadless area, but are reduced for the portion within the Project Area as the sights and sounds of logging and traffic may be evident in this area.

Environmental Consequences

Effects on Recreation Places

Eagle Creek Trail and Trailhead

Short-term recreation effects will occur in the form of sounds of logging activities. Some minor visual disturbances may be seen from the beginning of the trail. There will be no site-specific, direct effects on the trail corridor under any alternative. The ROS will remain Roaded Modified under all project alternatives.

Luck Lake Picnic Area

Short-term recreation effects will occur in the form of sounds of logging activities. Some minor visual disturbances may be seen from the beach and parking area. There will be no site-specific, direct effects on the picnic area under any alternative. The ROS will remain Roaded Modified for all project alternatives.

Baird Peak Trail, Trailhead, and Shelter

Since the actual alignment for the proposed trail and the sites for the proposed shelters have not been determined, it is likely that most potential effects can be mitigated by site location. Timber harvest will occur in the vicinity of the proposed locations, and the sounds of harvest activities will be noticeable in the short-term. Longer-term effects in the form of alteration of the visible landscape may be present. The ROS for these recreation places will be Roaded Modified in the short term and Roaded Natural in the long term.

Canyon Spur Trail, Trailhead, and Shelter

Since the actual alignment for the proposed trail and the sites for the proposed shelters have not been determined, it is likely that most potential effects can be mitigated by site location. Timber harvest will occur in the vicinity of the proposed locations, and the sounds of harvest activities will be noticeable in the short-term. Longer-term effects in the form of alteration of the visible landscape may be present. The ROS for these recreation places will be Roaded Modified in the short term and Roaded Natural in the long term.

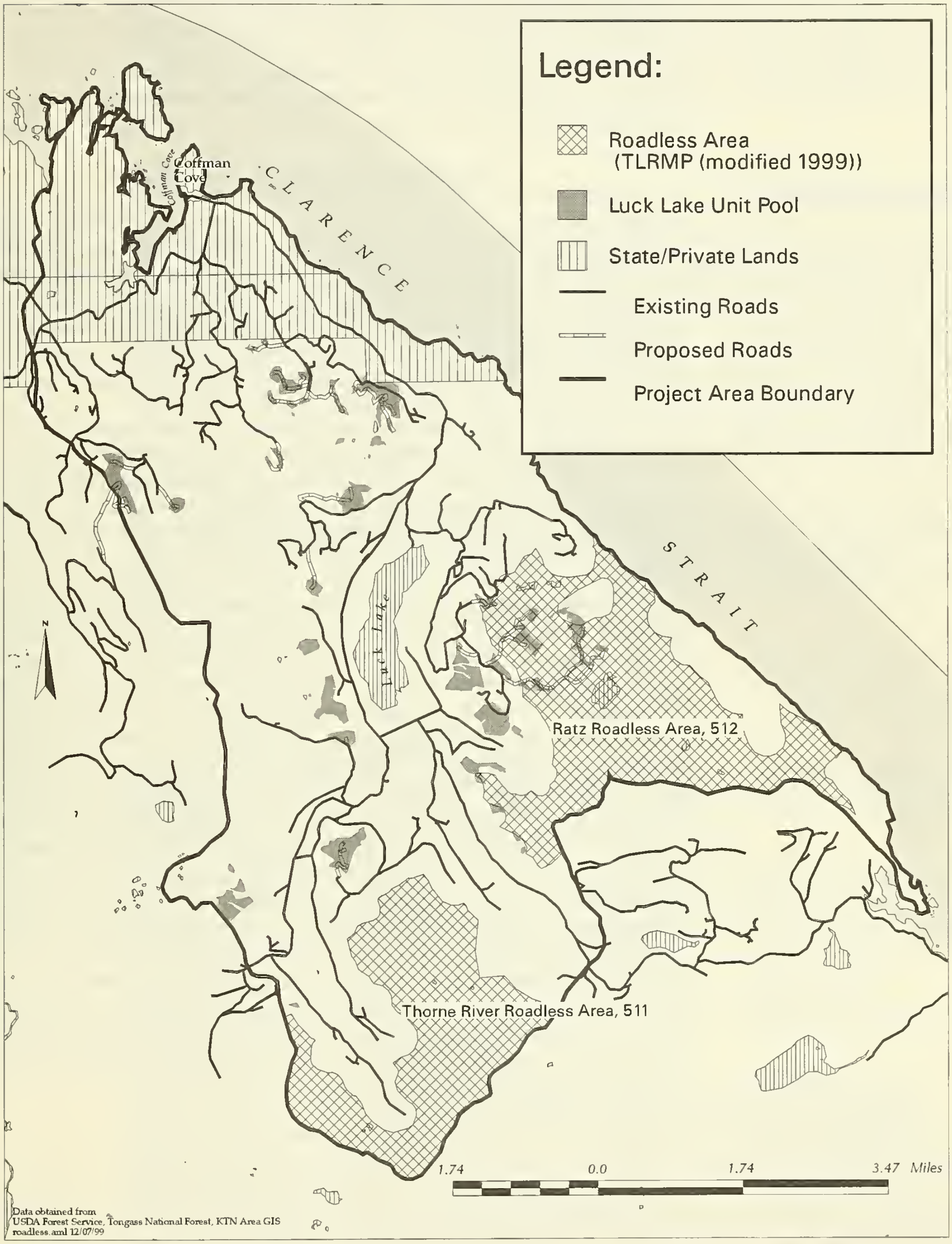
Roadless Areas

Ratz Inventoried Roadless Area

The alternatives will affect the Ratz roadless area variously (see Figure Recreation-1). All action alternatives propose activities consistent with the land use designations identified in the Forest Plan. The status of "inventoried roadless area" is usually limited to unroaded areas at least 5,000 acres in size (other than entire islands). (Inventoried roadless areas are those meeting minimum requirements for possible future consideration as Wilderness.) At 5,184 acres, the Ratz area will go below the minimum size requirement with relatively small alterations to its natural character.

Of the five action alternatives, three are not likely to change the roadless area status of the Ratz area. Alternative 5 has no activities proposed in the Ratz area. Alternative 3 has several small harvest units along existing roads on the west side of the area; these would not cumulatively result in the roadless character dropping below 5,000 acres. Alternative 2 has three small units and a spur road of about one mile entering the area to the north of Baird Peak; these alterations would leave the roadless portion at about 5,000 acres. Alternatives 2, 3, and 5 retain almost all of the existing unaltered wildlife habitat values within this area.

Figure Recreation-1
Roadless Areas within the Luck Lake Project Area



Alternatives 4 and 6, however, enter the Ratz roadless area with several miles of road and a number of harvest units of varying size. These alternatives would substantially alter the northern portion of the area (essentially the entire portion north of Baird Peak) and reduce its remaining unaltered portion to well under 5,000 acres, reducing the amount of unaltered wildlife habitat. The Ratz area could no longer be considered an inventoried roadless area.

Thorne River Inventoried Roadless Area

None of the alternatives propose any timber harvest or road building within the Thorne River roadless area; therefore, the value of the roadless area would not be changed under any alternative.

Cumulative Effects

In the past, harvest in the Project Area has been on a much larger scale than the actions currently proposed. Unit sizes were larger, road systems were much more extensive, and the overall intensity of harvest was higher. Boaters and people fishing on Luck Lake, Eagle Creek, and Coffman Cove were observers of logging activity adjacent to the shores of these water bodies. Large, notable openings were made on the hillsides and activity was constant on what was essentially an unmodified site. Hikers in the alpine would have been able to see logging activities underway at several places at once. The expectation of having a high quality remote recreation experience would have been diminished substantially.

The harvest prescriptions call for two-aged partial harvest of the units. Unit sizes are substantially smaller than in the past. With the units smaller and more spread out, the harvest intensity will seem less. Harvest units visible to areas of identified use will undergo very little noticeable change. Sounds of truck traffic and logging activity will still be prevalent but may be hard to pinpoint due to the lack of visual cues. The expectation of a high quality recreation experience will increase from that available in the recent past.

Currently, approximately 3,800 acres of suitable and available old-growth timber remains within the Project Area. This includes approximately two acres in the Thorne River inventoried roadless area #511 (23 acres if an action alternative is selected) and 585 acres in Ratz inventoried roadless area #512 (517 acres if an action alternative is selected). Assuming all of this timber would be harvested in the next 150 years, following the Forest Plan, visitors to the recreation places identified above would notice changes in the landscape similar to the ones proposed with this timber sale. If the presently undeveloped recreation places were developed, measures would be taken to mitigate the negative effects of timber harvest on the immediate sites. However, the signs of a working forest would be noticeable from most of the sites. During harvest, audible sounds of truck traffic and logging activity would be heard in the Luck Lake valley, Coffman Cove, and by those recreating on the alpine peaks. As the landscape changes visually from a predominately old-growth forest to a predominately second growth forest, patterns of harvest should become less noticeable and resemble natural occurrences. There may be less dispersed recreation in places where there is a transition from a multi-canopy, multi-aged stand to a two-aged stand. Typically, two-aged stands hold less interest for hikers and recreationists due to the decrease in stand structure and in the variety and diversity of animals. The jumble of logging slash present in the first 30-50 years after harvest also presents obstacles to recreation until the slash is broken down by the environment.

Scenery

The following discussions and analysis are based on and summarized from the Scenic Quality and Recreation Effects Analysis Report for the Luck Lake Project Area (1998). The scenic resources of the Tongass are also discussed in the Forest Plan FEIS, Chapter 3. Applicable direction may be found in the Forest Plan, Chapter 3 (Modified Landscape Land Use Designation), Chapter 4 (Forest-wide Standards and Guidelines), and Appendix F.

Affected Environment

Visual Character of the Project Area

The scenery of the Luck Lake Project Area varies from low rolling hills at Coffman Cove to the prominence of Baird Peak and its surrounding ridgelines just north of Ratz Harbor. In general, mountains up to 3,000 feet in elevation characterize the Project Area with one major east to west oriented stream and lake system. The mountains have extensive alpine areas with little or no vegetation and steep, densely forested hillsides. The stream and lake system consists of Luck Creek, which is four miles long and flows from the south into Luck Lake. Luck Lake is two miles long and one-half mile wide and drains into Eagle Creek, which flows north one mile into Clarence Strait. The alpine areas are dominated by scenic Baird Peak and nearby Baird Lake, situated at nearly 2,000 feet in elevation and surrounded by subalpine vegetation.

For planning and analysis, the scenic resource is described by viewsheds. A viewshed is the area visible from a specific human use area or travel route. The Forest Plan identifies specific "priority" use areas and travel routes for which the scenic resource is emphasized. The Luck Lake Project Area has four priority use areas:

- Coffman Cove
- Luck Lake and Luck Lake Boat Launch
- Eagle Creek Trail
- Alaska Marine Highway Ferry Route

The area's two major roads (forest development roads, or FDR's) are FDR 30 and FDR 3030 (see Figure 1-2 in Chapter 1). Together, these connect the communities of Coffman Cove and Thorne Bay. These routes are considered non-priority use areas.

The visual condition of the Project Area varies by location and is dependent on a variety of factors. In addition to the natural aspects just described, timber harvesting and road construction have altered the visual character of portions of the Project Area. Approximately 73 percent of the area is in an unaltered and naturally appearing condition (including all alpine areas and water bodies). About 19 percent of the area is in a slightly altered condition, consisting of units harvested between 1947 and 1977. Another eight percent is considered moderately to heavily altered.

The Forest Plan provides specific visual management direction for the National Forest System lands within the Project Area. The Timber Production and Modified Landscape Land Use Designations include visual resource standards and guidelines that apply to the timber harvest and related activities they allow. Generally, and exclusive of the Old-growth Habitat Land Use Designation, Timber Production encompasses areas not seen from the Alaska Marine Highway Ferry route, and Modified Landscape applies to the ferry route and Luck Lake viewsheds. The Modified Landscape designation allows foreground areas to be

slightly altered (8-20 percent visible disturbance), and middle-ground and background areas to be moderately altered (15-25 percent visible disturbance). Timber Production allows foreground areas to be moderately altered, and all other areas to be heavily altered (up to 50 percent visible disturbance).

Visual Condition of the Viewsheds

All of the viewsheds identified above are in a moderately to heavily altered condition. This is a result of past harvest being conducted at lower elevations and within popular use areas.

Priority Use Area Viewsheds

Coffman Cove: *Moderately Altered - 30% Visible Disturbance*
The hillsides behind Coffman Cove have seen quite a bit of harvest activity and alteration over the last thirty years. Harvest units and road systems implemented in the last five years are readily noticeable from points around town. Recent harvest on adjacent State of Alaska lands is highly noticeable from the harbor and its approaches from Clarence Strait and Kashevarof Pass. Almost all of the visible harvest on National Forest System land falls within the Timber Production Land Use Designation.

Luck Lake and Luck Lake Boat Launch: *Heavily Altered - 39% Visible Disturbance*
From the surface of Luck Lake and the boat launch area, a significant amount of harvest is noticeable. The area appears to be highly and actively modified. Several clearcut harvest units less than three years old are visible from the day use site; these units and more are easily seen from the surface of the lake and the boat launch, depending upon the viewer's location. Very little old-growth forest remains within the foreground and middle-ground distances of this viewshed, although much of what has been harvested is now reaching the age that it covers the bare, harvested ground and presents an even, green appearance. Some roads and landings are still visible and will continue to be through the duration of this project.

This viewshed exceeds the guidelines for allowable harvest under the Forest Plan prescription for Modified Landscape, as it does not have visual characteristics similar to those naturally occurring in the surrounding unmodified landscape.

Eagle Creek Trail: *Heavily Altered - 39% Visible Disturbance*
The interior viewshed of Eagle Creek Trail is unaltered with the exception of a few views upstream near the outlet of Luck Lake. These views are confined to the area approximately 50 yards downstream of the bridge and from the bridge upstream to the outlet of Luck Lake. These views are focused on the hillsides below Baird Peak and on the west and south side of Luck Lake. Although only occasional glimpses of recent harvest are available, almost all the hillsides that are visible have been harvested in the past and are in various stages of regrowth.

This viewshed exceeds the guidelines for allowable harvest under the Forest Plan prescription for Modified Landscape, as it does not have visual characteristics similar to those naturally occurring in the surrounding unmodified landscape.

Alaska Marine Highway Ferry Route: *Moderately Altered - 21% Visible Disturbance*
The views seen from the decks and cabins of Alaska Marine Highway ferries encompass a large majority of the Project Area. These views are usually of long duration and are studied in detail by ferry passengers and those on other craft plying Clarence Strait and Kashevarof Pass. The scenery along the route has been moderately to heavily altered throughout the Project Area. All stages of harvest and regrowth are visible - from the unmodified shoreline

and forested hillsides north of Ratz Harbor to recent clearcuts adjacent to Eagle Creek to the various stages of regrowth above FDR 3030 southeast of Coffman Cove. Many roads and some rockpits are also visible along this route. New harvest occurring on State of Alaska lands is within the background views as seen from the decks of the ferry. The visual impact of the State's clearcut harvest may push this viewshed over the threshold of allowable visual disturbance.

Non-priority Use Area Viewsheds

Although not priority travel routes, FDR 30 and FDR 3030 together are the major travel route between Coffman Cove and Thorne Bay. The viewshed of the portion of FDR 30 within the Project Area has been heavily modified by timber harvest activities in all distance zones. At several places along the road there are background views of the mountain range west of Luck Lake, which has been heavily and almost entirely harvested over the last ten years. FDR 3030 connects with FDR 30 at the south end of Luck Lake and continues northward to Coffman Cove and then southwest out of Coffman Cove. This route includes heavily modified foreground views along the shores of Luck Lake and Clarence Strait, and modified middle and background views across the lake to the slopes below Baird Peak. Recent harvest of most of the State of Alaska land west of the road is a major foreground impact from the Coffman Cove town limits for approximately three miles.

The portions of these viewsheds within the Modified Landscape designation exceed the Forest Plan guidelines for allowable harvest; they do not have visual characteristics similar to those naturally occurring in the surrounding, unmodified landscape.

Environmental Consequences

Effects by Viewshed

The effects discussion centers on the viewsheds just described. All other areas are considered unseen. The discussions assume that all units receive partial cut harvest prescriptions and retain 30 percent crown cover (see descriptions of alternatives in Chapter 2), with the exception of one unit (582-402) in both Alternatives 4 and 6.

Priority Use Viewsheds

Coffman Cove

There will be little noticeable effect on the scenery resource in this viewshed as a result of timber harvest activity in any alternative. Selective harvest techniques will result in textural differences only. This viewshed will remain within Timber Production Land Use Designation visible disturbance thresholds.

Luck Lake and Luck Lake Boat Launch

This viewshed currently exceeds visible disturbance thresholds for Modified Landscape. However, timber harvest under the Luck Lake alternatives will not noticeably exacerbate this condition. Little visual change will result from the partial harvest of units visible from the lake, and the differences in units harvested by alternative are minor. Of five potential units in the viewshed, Alternatives 3, 4, and 6 harvest all five, and Alternatives 2 and 5 each harvest three. Mitigation will be necessary for road and rockpit development within this viewshed, as listed on the ROD Table A3-1 and specified on the road cards for the Selected Alternative (Luck Lake ROD, Appendix 3) and for all units in Appendix C of the Draft EIS.

Eagle Creek Trail

This viewshed currently exceeds visible disturbance thresholds for Modified Landscape. However, timber harvest under the Luck Lake alternatives will not noticeably exacerbate this condition. Little visual change will result from the partial harvest of units visible from the trail, and the differences in units harvested by alternative are minor. Of six potential units in the viewshed, Alternatives 3, 4, and 6 harvest all six, Alternative 5 harvests four, and Alternative 2 harvests three. Mitigation will be necessary for road and rockpit development within this viewshed, as listed on the ROD Table A3-1 and specified on the road cards for the Selected Alternative (Luck Lake ROD, Appendix 3) and for all units in Appendix C of the Draft EIS.

Alaska Marine Highway Ferry Route

Most of the Luck Lake units are seen from the decks of the ferry at some point along the route. Although the viewshed is currently within the visible disturbance threshold for Modified Landscape, recent timber harvest of State of Alaska lands south of Coffman Cove is impacting the viewshed heavily. Little change will result from the partial harvest of units visible from the ferry route, which will occur under all action alternatives. Alternatives 4 and 6 include one unit requiring that only 10-20 percent of the original stand structure be retained (582-402). This unit is planned to avoid further degrading the scenic qualities of the ferry route viewshed. In combination with the harvesting on State lands, this could result in delaying future harvest entry.

Non-Priority Use Area Viewsheds

Many of the Luck Lake Project units will be visible from the roads connecting Thorne Bay and Coffman Cove. Almost all of these units will be in the middle-ground viewing distance, and noticeable by travelers only infrequently. Some of these units will exhibit textural differences for several years after harvest activities cease. One unit (572-412), included in Alternatives 3, 4, 5, and 6, lies within the foreground viewing distance of FDR 3030 and would be noticeable to passers-by.

Cumulative Effects

In the past, visible signs of harvest in the Project Area were extensive and quite noticeable to passers-by. Large areas of the forested hillsides were clearcut. At times, many openings easily exceeded 200 acres in size. Large clearcuts extended down both sides of the Luck Lake valley, along FDR 3030, and behind the city of Coffman Cove. The visible degradation of these large harvest units was noticeable from as far as 5-8 miles from the decks of the Alaska Marine Highway ferries. With geometric shapes and no harmony of line or form that resembled nearby natural openings, these clearcuts contrasted greatly with the nearby natural surroundings.

The current harvest proposal greatly reduces the overall scale of the harvest activity. First, all planned units will utilize partial harvest techniques; none will be clearcut. Harvest intensity is also greatly reduced with fewer units being planned for the Project Area than have been for past projects. Units will also have greater spatial distribution, resulting in less individual harvest activity seen at one time. More units are proposed to be harvested with helicopter and other less road intensive harvest systems resulting in less visible impact caused by roads and rockpits. The overall effect will result in a transition from apparent visually indiscriminate harvest to most harvest not being discernable from natural processes such as blowdown.

Over time, the areas within the Modified Landscape Land Use Designation will change noticeably. The current situation of obvious harvest effects, including large tracts of even color (second growth) and obvious human-made openings within an even-textured old-

growth forest, will give way to a more visually diverse forest. Harvest visible to priority travel routes and use areas will be designed to reflect nearby landform shapes and textures, and the visual impact of these openings will recede over time. Ultimately, the human-made openings will resemble natural occurrences, but at a larger scale than normally found in the natural environment. Textural differences will gradually fade and the color differences seen in the past between clearcuts and old growth will be greatly subdued as clearcut areas regenerate and partial harvest becomes the norm.

For those areas within the Timber Production Land Use Designation, the future will show more evidence of a working, industrial forest. Changes will be obvious to forest visitors in the form of harvest units and supporting infrastructure. Openings not visible from priority travel routes or use areas will be out of scale with natural openings and will not resemble old-growth forest stands.

Mitigation

The Forest Plan identified the important or more frequently seen viewsheds of the Project Area as priority travel routes or use areas. Those managed under the Modified Landscape Land Use Designation will have effects to foreground views minimized. Most current and future units will be implemented with partial harvest prescriptions, which will help to mitigate the visual effects of timber harvest.

Silviculture and Timber Management

The following discussions and analyses are based on maps, queries, stand exam data, silvicultural prescriptions and other documentation available in the planning record. Additional background on forest land classification, silvicultural and logging systems, and other related topics may be found in the Forest Plan FEIS, Chapter 3: "Timber" and Appendix G. Applicable direction is contained in the Forest Plan, Chapter 2, Chapter 3 (Timber Production and Modified Landscape Land Use Designations), Chapter 4 (Forest-wide Standards and Guidelines), the 1999 Record of Decision, and Appendix A.

Affected Environment

Forest Land Classification

The natural vegetation of the Luck Lake Project Area is a mosaic of coniferous forest interspersed with alpine tundra, muskeg (bog), shrubland, estuarine, and beach fringe plant communities. The area contains seven forested plant series (climax communities), all of which are commonly found throughout Prince of Wales Island: Sitka spruce, western hemlock, and mountain hemlock series; western hemlock-yellowcedar and western hemlock-western redcedar series; and mixed conifer and shore pine series. Together these (and other forested climax communities in other areas) are loosely termed "old-growth forest." The Biodiversity and Old Growth section of this chapter discusses aspects of old-growth forest not related to forest products. Various nonforested plant communities also occur in the Project Area in estuaries, riparian areas, muskegs, alpine meadows, and alpine lichen rock outcrops.

Vegetative cover, soil type, and administratively or congressionally designated land use define National Forest System lands. This classification scheme is intended to show the amount of land that is covered by forest vegetation with further divisions to show the amount of land capable of, or available for, timber production. Appendix A of the Forest Plan provides a detailed discussion of timber resource land suitability. To be considered both suitable and available for harvest, lands must be determined tentatively suitable for timber management, and must be within a land use designation that allows timber harvest. For the Project Area, these Land Use Designations include Timber Production and Modified Landscape. Within these designations, Forest Plan standards and guidelines also apply, making additional areas - the beach and estuary fringe, areas of high vulnerability karst, riparian management areas, and wildlife nest or den buffers - unsuitable or unavailable for timber harvest.

To be considered suitable for timber management, forested lands must be capable of producing at least 20 cubic feet of tree growth annually, and/or must contain at least 8,000 board feet of net timber volume per acre. Lands with these characteristics are termed "productive forest." The Forest Plan defines commercial forest land as "forest land that is producing or is capable of producing crops of industrial wood and (a) has not been withdrawn by Congress, the Secretary, or the Chief; (b) existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity, or watershed conditions; and (c) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking can be attained within 5 years after final harvesting."

Commercial forest land within the Project Area originally (in 1954) totaled about 24,478 acres, of which 9,938 acres have been harvested for timber to date. Of the remaining 14,540 acres of commercial forest land, 10,740 are classified as unsuitable for timber management, either through land use designation (as Old-growth Habitat), standards and guidelines (riparian areas and the beach fringe), soils or slope criteria. This leaves 3,800 acres of old-growth timber currently suitable and available for harvest.

The previously harvested areas are now young, even-aged stands. Some of these lands (2,840 acres) have since been transferred to non-Forest Service ownerships, and another 2,035 acres have since been reclassified as unsuitable for timber management. The remaining 5,063 acres of young growth stands (almost all younger than 40 years) will not be available for regeneration timber harvest until they reach about 180 to 200 years in age.

Forest Plan Desired Future Condition

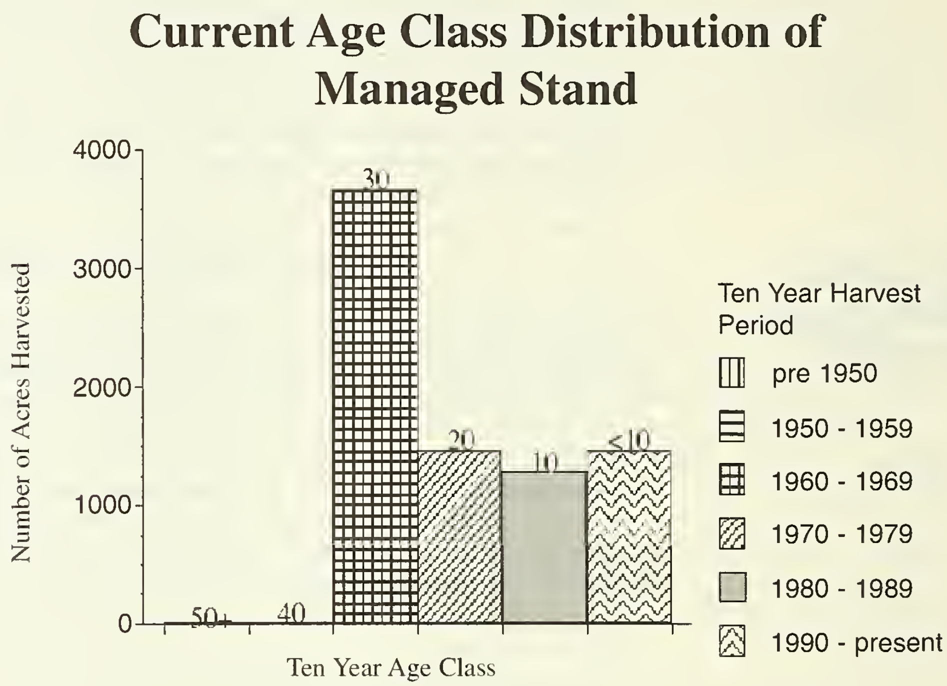
Stands of trees that are healthy and in a balanced mix of age classes, from very young to harvestable age, are a key part of the desired future condition for lands within the Timber Production Land Use Designation. Within the Modified Landscape designation, the desired condition is a variety of successional stages, with less evidence of harvest in foreground areas viewed by forest visitors (Forest Plan, Chapter 3, pages 3-135 and 3-144).

The typical development of an even-aged stand includes a seedling-sapling stage (the first 20 years following harvest), a pole-young sawtimber stage (20 to 80 years), and a mature sawtimber stage (80 to 100 years). These stages are roughly equated to typical even-aged stand development stages: the stand initiation stage, the stem exclusion stage and the understory reinitiation stage (Oliver, 1981)(Oliver and Larson, 1990). Unless intermediate treatments such as precommercial tree thinning and commercial tree thinning are performed, understory development occurs during the first and third stages, but is largely absent (except for mosses) during the pole-young sawtimber stage. If the stand is not harvested after 80-100 years, mature stand characteristics may last another 60 years or so, after which the stand will begin to develop a multi-storied and multi-aged structure more characteristic of old growth. Precommercial thinning can shorten the time for a stand to reach the pole-sawtimber stage and create a more two-storied stand structure as well as lengthening the time the productive understory remains for wildlife. Commercial thinning performed during the young sawtimber stage may add to stand structural diversity as well.

Although timber has been harvested from the Project Area since about 1954, the percent of land already harvested exceeds the percent of the rotation that has already passed. This is due in part to differences in rotation age between the 1979 and 1999 modified Forest Plans. For example, the current Forest Plan Record of Decision extended the rotation age from 100 to 200 years in all Project Area VCU's. Opportunities to achieve a more desired balance of age classes will not be available for the existing young growth until these young forests reach a minimum age of 200 years. However, many past harvest areas are available for intermediate treatments, which would contribute to the goals, objectives, and, desired future condition of the land use designation in which they occur. Intermediate treatments such as precommercial tree thinning and other forms of vegetative manipulation can be of benefit not only to timber production but also to wildlife, fisheries, and scenic quality, and should be considered for these lands.

The current age class distribution for young growth stands on National Forest System lands within the Project Area is presented in the Current Age Class Distribution graph (Figure Silv-1). The Old-growth Habitat land use designation includes 225 acres of these young-growth stands.

Figure Silv-1
Luck Lake Project Area - Acres of Suitable Timber Harvested by Age Class



Suitable Commercial Forest Lands

Silvicultural Systems

The term "silvicultural system" refers to a planned process in which a stand is harvested, re-established, and tended. The system name is based partly on the number of age classes present after the harvest treatment such as even-aged, two-aged and uneven-aged systems, and partly on the forest regeneration requirements. In general, even-aged systems are used when open canopy conditions are required for successful forest regeneration. Two-aged and uneven-aged systems are used when management objectives require leaving a substantial number of trees unharvested or when more closed canopy conditions are required for successful forest regeneration. For example, in even-aged systems, clearcut methods are used for regenerating tree species that require open conditions, seed tree methods are used for situations where natural seed of some particular species is desired, and shelterwood methods are used where shelter (from sun, snow, etc.) is required for successful forest regeneration. The following silvicultural system descriptions are summarized from the Forest Plan FEIS, Appendix G.

Even-aged systems produce stands that consist of trees of the same or nearly the same age. A stand is considered even-aged if the range in tree ages normally does not exceed 20 percent of the age at which the stand is to be harvested (the "rotation age"). Seed tree cutting, shelterwood cutting, and clearcutting will produce even-aged stands.

Two-aged stands result from treatment methods that leave behind a substantial portion of the original stand structure in the form of large trees distributed or clumped throughout the stand

area. The remnant trees left on the site represent one "age class" and the newly established trees represent another age class. Clearcutting (including patch and strip cutting) with reserves, shelterwood cutting with reserves, and seed-tree cutting with reserves will produce two-aged stands providing there is a relatively even distribution of retained trees over the harvested area.

Uneven-aged systems create stands that include three or more distinctly different age classes by removing some trees in all age groups and stratum either singly, in groups, or in strips. Uneven-aged conditions are achieved through management by using individual tree or group selection methods, with no created opening larger than two acres.

Two basic categories of unmanaged, natural forests occur in Southeast Alaska: disturbance and gap phase. Even-aged and two-aged systems more closely mimic the natural conditions of the disturbance category (for instance, areas subject to windthrow). Uneven-aged systems more closely mimic the gap dominated old-growth ecosystems (where large scale disturbance is not a major factor).

The selection of the appropriate silvicultural system and method depends on sound management objectives. These can include objectives for species composition, stand density, growth rate, insect and disease control, overstory condition, and development. Forest Plan direction and significant project issues are used to refine site-specific objectives. Different silvicultural systems, or methods within a system, could be used to meet the management objectives of a given site for different alternatives.

Distinguishing scale when visualizing harvest treatments for individual units or stands is important. For instance, while the ideal condition may be to apply a treatment uniformly over an entire harvest unit, this is often not possible due to terrain, logging systems, or vegetative conditions. A management objective may be to leave 50 percent of the existing trees undisturbed, however, site conditions may prevent uniform distribution of retained vegetation resulting in groups of reserve trees instead of evenly distributed reserve trees. This may result in what appears to be several small clearcuts or, conversely, a few large clearcuts. When the entire treatment area is considered, however, half the trees have been retained, the prescription followed, and resource objectives met. Such may be the case when applying the standards and guidelines for marten and goshawk. These standards and guidelines specifically allow for the grouping of retained trees in order to take advantage of on the ground conditions and enhance resource protection. The Tongass National Forest Land and Resource Management Plan Implementation Policy Clarification (TPIT) report identifies five areas that can contribute to the marten and goshawk standards and guidelines forest structure requirements (TPIT, page 11-12):

1. Areas deleted from harvest for soils, harvest, wildlife islands, etc., which were originally planned (developed in the Logging System Transportation Analysis) for harvest as part of the harvest unit.

2. Individual trees or clumps of trees, merchantable or unmerchantable, meeting standard and guideline requirements and left within the harvest unit.

3. Additional buffers on streams adjacent to harvest units, exceeding Forest Plan minimum riparian standards and guidelines.

4. Class III and IV stream buffers and partial cut stream buffers within the harvest unit.

5. Riparian standards and guidelines buffers, on Class I and II streams, protruding into the harvest unit as peninsulas.

Two-aged systems will be used to meet the American marten and goshawk standards and guidelines in some units. These units will retain a sufficient quantity and distribution of unharvested trees to meet the standards and guidelines and the definition for two-aged stands.

For a detailed discussion of silvicultural systems and methods, see the Forest Plan FEIS, Appendix G, Appendix N, and 1999 Record of Decision. Factors influencing and criteria for selection of appropriate harvest methods and silvicultural systems are also presented in the National Forest Management Act implementing regulations (36 CFR 219.27) and the Alaska Regional Guide.

Logging Systems

Yarding is the process of bringing logs from the stump to a centralized landing area. This can be done using ground-based, cable, or helicopter yarding systems. The method used depends upon many factors including access, topography, slope, and resource protection needs (e.g. log suspension requirements).

Ground Based Yarding

Moist, soft soil conditions in conjunction with steep slopes found in the Project Area limit ground-based equipment operation. Ground based systems are usually limited to areas with slopes less than 30 percent. Project Area logging system designations at the planning level, have classified units as cable, ground based, and/or helicopter yarded. Some portions of cable units, especially along road rights-of-way, may also be suitable for ground based (shovel) yarding. The decision to specify shovel yarding within a given unit is made during planning reconnaissance and unit implementation.

Cable Yarding

Cable yarding systems are the most common logging systems used throughout Southeast Alaska. Cable systems are best suited for the steep slopes and wet soils of these areas, and most cable systems can partially or fully suspend logs over the ground, minimizing soil disturbance. At the present time, running skyline has replaced highlead as the favored cable system. Other cable systems are prescribed where topography and yarding distances exceed running skyline capabilities.

Helicopter Yarding

Helicopter yarding has been successfully used throughout the Tongass in recent years. With this system, logs are lifted off the ground (fully suspended) and flown to a specially prepared landing. Helicopter yarding causes the least amount of ground disturbance of all the yarding systems, but has the highest yarding cost. Timber market values more closely affect the economic feasibility of helicopter yarding systems than cable yarding systems. Currently, helicopter flight time costs between $2,000 and $5,000 per hour; to be economical, this system requires a flight time of no more than about three minutes between loads, or turns, of logs. Factors affecting flight time and economic feasibility include elevation differences between stump and landing, logs/volume per acre, species mix and subsequent value, and payload capabilities of the aircraft.

Environmental Consequences

Goals and objectives for various land use designations and the application of Forest Plan standards and guidelines result in the exclusive use of two-aged and uneven-aged silvicultural systems throughout the Project Area. No traditional, even-aged clearcutting is prescribed for the Luck Lake Project under any of the alternatives. Spatial distribution of retained trees will vary between harvest units and alternatives depending on resource objectives, site conditions, and logging systems, but is constrained by the minimum retention levels specified in the Forest Plan standards and guidelines which will qualify these treatments as two-aged. Proposed harvest units range in size from three acres (Alternatives 4 and 6) to 89 acres (Alternatives 3, 4, 5, and 6). Average unit size varies from 26 acres (Alternative 2) to 36 acres (Alternative 5). No created openings exceed 100 acres.

Silviculture: Direct, Indirect and Cumulative Effects

Regeneration

All of the areas proposed for timber harvest are expected to be restocked within five years, as required by National Forest Management Act regulations (36 CFR 219.27(c)). Regeneration (stocking) surveys will be conducted on all harvest units after the third full growing season following the completion of logging. We expect all harvested areas under all alternatives to be naturally stocked and certified after three full growing seasons. Should portions of harvest units require planting to meet minimum stocking requirements, species composition objectives, or other resource objectives, a silviculturist will make plans for planting and amend the original prescription.

Required Retention

Forest Plan goshawk and marten standards and guidelines require retaining a minimum of 30 percent canopy closure, consisting of at least 8 large trees per acre, in harvest units within VCU's 572 and 581 due to the amount of past harvest. An additional three large trees per acre are to be retained as snags or snag recruits (Forest Plan, pp. 4-91 and 4-119). Retained trees should be as evenly distributed as possible throughout the harvest unit. Where even distribution of retained trees is not possible or retention of groups is more advantageous to the protection of other resource values, 10 percent of the original stand structure must remain between retention groups. In VCU 582, a minimum of 10 to 20 percent of the original stand structure is to be retained in all new harvest units on acres of high-value marten habitat and must consist of a minimum number of large trees, decadent trees, and down trees (Forest Plan, pp. 4-118 to 4-119). Site-specific harvest unit prescriptions will use several approaches to minimize wind damage in the remaining overstory.

Successional Stages and the Desired Future Condition

After reforestation, managed forests grow through several distinctive successional stages in which different components dominate the stand and forest structure changes over time. Harvest areas proposed under the Luck Lake Project are designed to have two or more age classes (or size classes) after the initial harvest. The stands will have characteristics of both old-growth and managed, even-aged forests since a substantial portion of the original overstory will be retained in harvest units under all alternatives. Harvest units within VCU 582 will be more similar to even-aged stands since the prescribed overstory retention levels are lower.

Land use designations allowing timber harvest activities within the Project Area are the Modified Landscape and Timber Production designations. All action alternatives will move the Project Area toward the desired future condition by creating young, managed stands, adding to the variety of successional stages and age classes within the Project Area.

All harvest units consist of "overmature" stands that are well beyond the age of maximum average annual growth of the stand. The acres of harvest in each alternative equates to the acres of overmature stands to be converted to a managed condition. Alternatives 4 and 6 convert the most acres to a managed condition (1,038 acres), followed by Alternative 3 (843 acres), Alternative 2 (461 acres), and Alternative 5 (426 acres). Alternative 1 proposes no timber harvest and thus converts no stands to a managed condition. Alternative 1 would not serve to move the Project Area toward the desired future condition in the short term. Alternative 1 would preserve the opportunity for harvest entries in the Project Area throughout the rest of the rotation.

Long-term Timber Productivity (Yield)

All stands proposed for harvest are overmature. Most are representative of uneven-aged western hemlock stands that commonly take hundreds of years to develop under natural conditions. Harvest increases forest floor temperatures, speeding up organic decomposition and increasing the supply of available nutrients to the trees. The effects of all action alternatives on long-term yield would be the partial conversion of unmanaged, slow-growing, overmature stands to managed, faster growing, more productive, multi-aged or two-aged stands.

The open conditions created by even-aged, two-aged and uneven-aged (group selection) systems allow Sitka spruce, western redcedar, Alaska yellowcedar and western hemlock to regenerate rapidly, but tend to favor spruce and cedar, the more desirable species for forest products, over hemlock. Selection harvests using individual tree and small group selection methods may tend to favor the less valuable and more shade tolerant hemlock. Based on past experience with even-aged stands and ground based cable yarding systems, the composition of new forest vegetation generally includes 10 to 75 percent spruce, depending on the soil type and age of the stand; the volume of spruce in even-aged stands 75 to 100 years after harvest is about 50 percent compared to 28 percent in existing overmature stands. With the use of precommercial thinning, an additional 10-20 percent increase in the spruce and/or cedar components can be attained. The composition of new forest vegetation in the two-aged and group selection uneven-aged stands, proposed in the Luck Lake Project, is expected to be similar to even-aged clearcuts. We suspect that helicopter yarding may decrease the relative proportion of spruce and cedars in new forest stands due to the increase of advance hemlock regeneration and decrease in vegetative disturbance compared with ground based cable yarding systems. In addition, helicopter yarding may decrease roaded access to some harvest units and prevent economical precommercial thinning. These factors may result in some future stands having higher hemlock components and shorter-term wildlife forage benefits than would otherwise be achieved. Vegetative survey information indicates that spruce and cedar components in most future stands will be at acceptable levels and stand development will proceed at acceptable rates, without the stagnation expected in pure and near pure hemlock stands lacking intermediate stand treatments.

Although log quality in managed stands could be lower than in existing overmature stands, even on sites that have been precommercially thinned, total yield per acre will be higher in managed stands with or without precommercial thinning. The lower quality would be reflected in the log grades, with managed timber stands having fewer top grade logs than

existing overmature stands. Most managed stands will exhibit less variation in tree diameter and height than the overmature stands they replace but higher variation than stands resulting from past even-aged clearcutting practices.

Post-harvest Silvicultural Treatments

Post-harvest silvicultural treatments will be prescribed on a site-specific basis to help move the Project Area toward the Forest Plan desired future conditions. Treatments may vary from site to site depending on land use classification, slope, soils, aspect, elevation, and resource objectives. Possible silvicultural treatments for areas of prior harvest and harvest units proposed under the Luck Lake Project include planting, precommercial thinning, and commercial thinning. Planting for species diversity and precommercial tree thinning may be limited by available funding and/or access limitations.

Precommercial thinning is planned on Project Area sites that have been previously harvested, as well as sites harvested under this project. Site-specific unit prescriptions will guide cultural treatments for units harvested under this project and on the ground investigations will identify areas of prior harvest in need of precommercial thinning. Precommercial thinning reduces the competition for sunlight, moisture, and nutrients on growing space. Reduced competition results in accelerated growth rates in remaining trees and longer growth periods for the understory plants and remaining conifers over unthinned, young even-aged stands. Precommercial thinning can also be used to change species composition and windfirmness of the stand; cedar and spruce will be favored during the thinning process. Precommercial thinning may also be used to improve riparian area conditions (where past logging was done close to streams) and increase forage for wildlife, should funding be available.

Precommercial thinning is performed approximately 15-25 years after harvest and is dependent upon site, stocking, and other resource needs. Due to steep terrain, accessibility, safety considerations, resource protection needs, access limitations, and budget constraints, some acres may not be thinned. Access management actions associated with the Luck Lake Project have been coordinated with anticipated post-harvest treatment activities to avoid precluding reasonable access for these treatments.

To date, most of the previously harvested lands in the Project Area meeting size requirements for precommercial thinning have already been treated. A few stands have been treated to provide for wildlife forage. Current plans include treatment on nearly all remaining prior harvest areas.

During the 1999 field season, on-site evaluations were performed for all accessible, untreated young growth stands over five years of age. Based on these field evaluations, a vegetative treatment strategy was developed that identified the need for treatment, the current priority for treatment, and the resources likely to benefit from treatment. Access conditions were considered for each evaluated young-growth stand and the information was incorporated into access management plan for the Project Area. A long range (10 year) vegetative treatment plan was developed, which considered all untreated young growth in all land use designations and uses pre-commercial thinning as the primary treatment to achieve a wide range of resource objectives. Implementation of this plan will contribute significantly to attaining the desired future condition for all land uses where treatment is considered.

A total of 882 acres were identified and scheduled for treatment and another 1,554 acres were scheduled for further evaluation within the next ten years. Table Silv-2 displays the young growth treatment needs, listing areas by grouping of similar vegetation types (STAND), geographical grouping of stands (TM-COMPARTMENT), and associated acreage.

The accompanying map, Figure Silv-2 displays the locations of treatments planned in the next five to ten years. Young growth displayed on the map and not identified for treatment either has already been treated, is no longer being considered for treatment, or is not expected to enter the appropriate vegetative size class for treatment within the next ten years.

Timber Management: Direct, Indirect and Cumulative Effects

Table Silv-1 displays the proposed harvest volume by VCU and alternative. Alternative 1 includes no timber harvest. Alternatives 4 and 6 would offer the most timber volume for sale, almost 17 million board feet (MMBF). These are the only alternatives proposing harvest in VCU 582. Alternative 3 would offer just over 14 MMBF. Alternatives 5 offers the least volume, under 7 MMBF, and Alternative 2 offers almost 8 MMBF. Harvest from VCU 581 is higher under all action alternatives than from VCU 572. Volume recovered from right-of-way clearing is considered incidental to the proposed timber harvest and is not included in the table. The right-of-way volume varies from 150 thousand board feet in Alternative 2 to 950 thousand board feet in Alternatives 4 and 6.

Table Silv-1
Proposed Harvest Volumes by VCU by Alternative

	Total MBF Volume					
VCU	**Alt. 1**	**Alt. 2**	**Alt. 3**	**Alt. 4**	**Alt. 5**	**Alt. 6**
572	0	1,022	3,248	4,137	1,862	4,137
581	0	6,843	10,906	11,071	4,731	11,071
582	0	0	0	1,727	0	1,727
Total Unit Volume*	**0**	**7,865**	**14,154**	**16,935**	**6,593**	**16,935**

* Not including right-of-way volume
Source: USDA-Forest Service, Tongass NF, GIS

Logging System Transportation Analysis (LSTA)

The original LSTA for the Luck Lake Project Area identified approximately 1,800 acres of potential harvest units. From this pool of units, the interdisciplinary team (IDT) selected 1,400 acres that were tentatively suitable for timber management. Subsequent field analysis identified another 350 acres (including portions of units) as unsuitable for timber harvest, including areas not capable of producing sufficient volume and unmapped streams requiring riparian buffers. The project planning record contains a list of the units not in the current Luck Lake unit pool and the reasons for not including them.

Effects on the Tongass Timber Supply

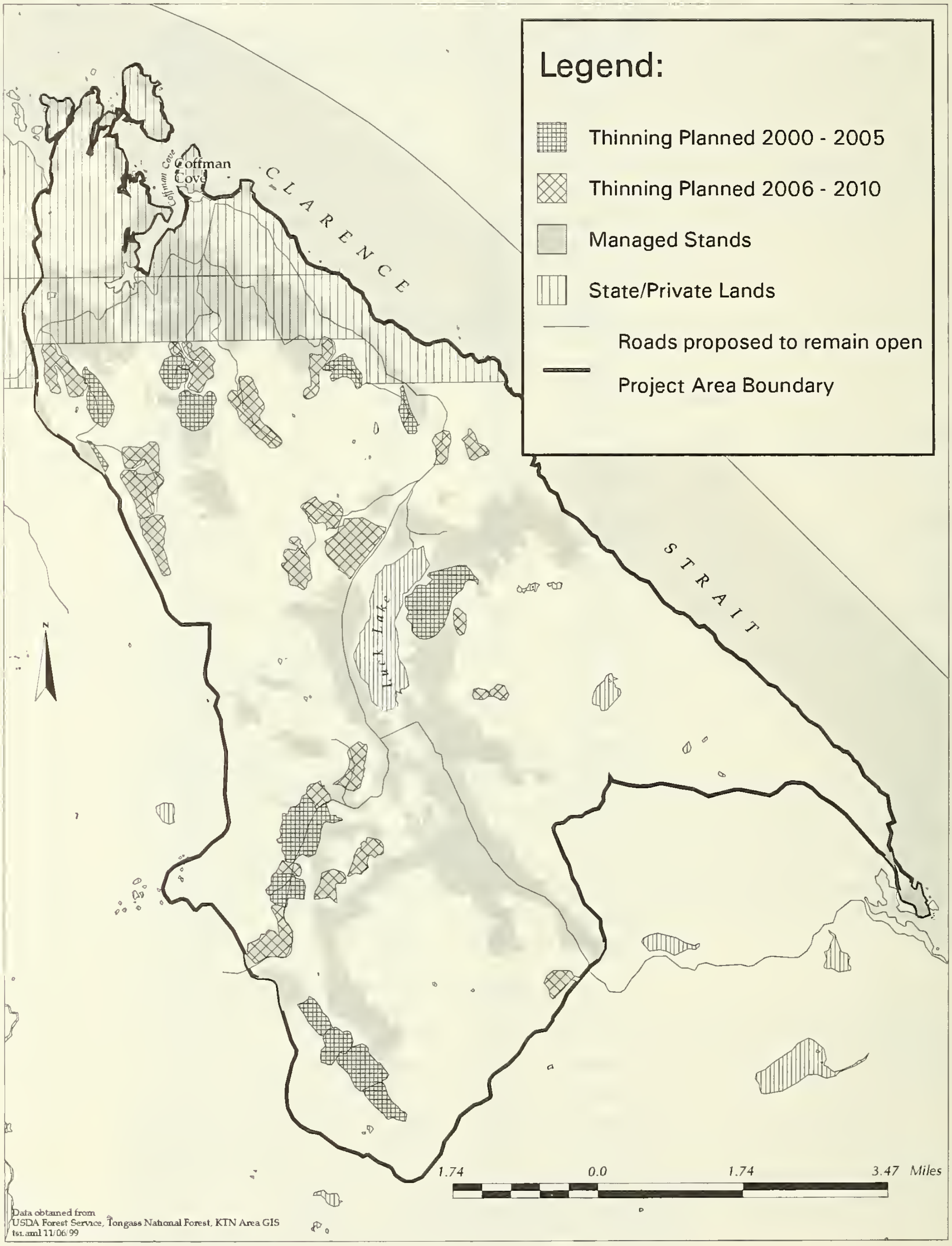
For more detailed information on this topic, see Appendix A - Reasons for Scheduling the Environmental Analysis of the Luck Lake Timber Sales. The Forest Plan FEIS identified several factors that have commonly led to actual harvest volumes from timber sales that are less than the volumes estimated during project planning (see Forest Plan FEIS, Chapter 3: "Timber" and Appendix B). These "management implementation reduction factors" (MIRF's) were applied to each Forest Plan alternative, and for each former Administrative Area of the Tongass. A close correlation between planned and implemented harvest volumes should result from using the MIRF's to estimate the actual volume available over time. Harvests volume "falldowns" experienced in recent years are not anticipated to occur in the Luck Lake Project.

Table Silv-2
Luck Lake Project Area - Timber Stand Improvement (TSI) Opportunities
From 1999 Field Surveys

TM_Comp. Number	Stand Number	Year of Harvest	Acres	Road Number	Benefiting Resource	Thin Plan Year	Next Exam Year
57202	0505	1974	63	3030300	T	2001	
57202	0507	1974	17	3030300	T	2001	
57202	0508	1979	80	3030400	T		2002
57202	0517	1992	67	3030300	T		2007
57203	0507	1980	108	3030400	T	2002	
57203	0508	1979	69	3030400	T	2002	
57203	0511	1981	62	3030400	T		2002
57203	0512	1983	94	3030600	T	2002	
57203	0513	1982	108	3030600	T		2002
57203	0514	1979	13	3030600	T	2002	
57203	0516	1990	112	3030600	T/F		2005
57203	0517	1992	69	3030600	T		2007
57203	0518	1992	99	3030400	T		2007
57203	0521	1991	87	3030600	T/W		2006
58101	0502	1974	17	3030300	T	2001	
58101	0515	1989	40	3030	T		2004
58101	0516	1989	156	3000/3030200	T		2004
58101	0517	1989	82	3030200	T		2004
58101	0518	1990	88	3030200	T		2004
58101	0526	1992	22	3030270	T/W		2005
58102	0502	1969	92	3030110	T/W/R	2001	
58102	0556	1993	14	3000320	T		2005
58102	0572	1993	25	3000320	T		2005
58102	0573	1993	18	3000320	T		2005
58103	0505	1973	125	3000	T	2001	
58103	0507	1973	28	3000	T	2001	
58103	0508	1973	56	3000	T/F/R	2001	
58103	0513	1975	73	3000336	T	2003	
58103	0514	1975	25	3000336	T/W	2003	
58103	0516	1986	111	3000	T		2002
58103	0518	1993	75	3000329	T		2005
58103	0519	1986	23	3000	T		2003
58103	0531	1986	65	3000336	T	2003	
58103	0532	1986	37	3000336	T	2003	
58103	0533	1986	38	3000	T		2005
58104	0518	1986	66	3000333-1	T		2004
58104	0520	1991	51	30 summit spur	T		2006
58104	0521	1992	61	3000330/3000333	T		2006
Total Acres of Thinning Planned			**882**				
Total Acres Needing Re-examination			**1,554**				

Benefiting Resources: T=Timber; W=Wildlife; F=Fisheries; R=Riparian (RMA)

Figure Silv-2
Luck Lake Project Area - Thinning Opportunities



Interdisciplinary field review during the Luck Lake Project planning has accounted for nearly all acreage deferrals and deletions. Deferral of harvest to meet Forest Plan standards and guidelines occurred early in the process, and additional deferrals due to suitability factors such as very high hazard soils, low site index, and buffers for unmapped streams were accounted for during field review of the proposed units. Few additional deferrals due to suitability factors are expected.

The use of harvest prescriptions other than even-aged clearcut is fully accounted for in this analysis. VCU's 572 and 581 will retain a minimum of 30 percent overstory canopy closure and VCU 582 will retain between 10 and 20 percent existing stand structure on acres of high-value marten habitat with the application of Forest Plan standards and guidelines. No units utilize traditional, even-aged clearcut prescriptions.

Economic deferral is dependent on changing economic conditions including log prices, the cost of accessing harvest units (roads), and the efficiency of harvest systems (including yarding and hauling costs). The economics of timber harvesting varies considerably over the short- and long-term and its effect on overall timber supply is difficult to quantify accurately. The Forest Plan divides the allowable sale quantity into two non-interchangeable components (NIC's) based on economic factors, and requires the two NIC sale volumes to be kept separate for planning and accounting purposes. No NIC II (less economic) volume is planned for the Luck Lake Project Area at this time. Additional economic deferral has been accounted for during field review and development of alternatives. The actual final economic deferral will depend on how individual sale area boundaries are defined. In some cases, economic deferral can be reduced or minimized when lower value areas are combined with higher value areas and economic logging methods are chosen.

Effects Relative to Logging Systems

All proposed logging systems conform to Forest Service Handbook and Manual direction, Forest Plan standards and guidelines, Best Management Practices, and OSHA Safety Standards. Specific logging systems were assigned through logging system engineer recommendations and interdisciplinary analysis to minimize potential effects. Special yarding requirements are specified on the unit cards (see Luck Lake Draft EIS, Appendix B and ROD, Appendix 2, for the Selected Alternative). On-site ground reconnaissance and actual field evaluations during the planning and layout process will ensure the assigned logging system provides the required suspension to meet management objectives. (Effects resulting from logging systems are discussed in the Soils and Water sections.)

Table Silv-3 shows the harvest acres by logging system. Shovel yarding will be used on 2 to 10 percent of harvested acres in all action alternatives. The use of this economic logging system is usually associated with right-of-way clearing and in units with slopes less than 30 percent. All action alternatives use running skyline, the most economical cable system commonly in use, for a substantial portion of the total harvest (30 to 62 percent). The proportion is highest for Alternative 5, which emphasizes smaller sale opportunities. All action alternatives also use other cable systems to some degree; these normally represent units for which running skyline did not meet yarding requirements. Helicopter logging is substantial in Alternatives 3, 4, and 6 (68, 33, and 33 percent): in Alternative 3 because it minimizes new road construction (in relation to the amount of harvest volume); in Alternatives 4 and 6 because it maximizes timber harvest volume.

Table Silv-3
Acres of Harvest by Logging System by Alternative

Yarding Type	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Running Skyline	265	254	443	264	443
Other Cable	0	0	188	80	188
Helicopter	160	571	342	50	342
Shovel	36	18	65	31	65
Total	**461**	**843**	**1,038**	**426**	**1,038**

Opportunities for Small Sales

All action alternatives would have harvest units and volumes offered in two or more sales, offering different sized sales to meet the needs of different types of purchasers. Alternatives with higher volumes have the flexibility to offer a variety of sales.

In addition to these sales, and under any alternative (including Alternative 1), the Thorne Bay Ranger District's annual small timber sales program offers approximately five million board feet of timber, which provides many small and micro sale opportunities.

Timber Financial Efficiency Analysis

Harvest Economics

Current direction in Forest Service Handbook (FSH) 2409.18 requires a financial efficiency analysis to compare benefits and costs of a project. Therefore, a financial analysis was conducted to display a comparison between the Luck Lake Project action alternatives. This analysis compares expected pond log values against estimated costs and arrives at an estimate of net stumpage values. Values used in the analysis must reflect high market conditions (based on 1st quarter 1995 values and average Forest-wide species compositions) and current market conditions at the time of the review. Table Silv-4 displays the financial efficiency of each action alternative. Alternative 1, the no action alternative, is not displayed because there is no harvest associated with it.

The volumes listed for each alternative include estimates of sawlog, utility, and road right of way volumes. These volumes are based on stand exam field information and geographic information system (GIS) data. If an action alternative is selected, the actual cruise volume will vary somewhat from EIS estimates.

Table Silv-4 displays the major timber sale cost components for each action alternative. The "transportation costs" component includes "stump-to-truck" logging costs, such as felling, bucking, yarding, loading, and administration, and related costs such as haul, dump, tow and raft costs. "Construction costs" include all capital investments; for the Luck Lake Project these include road construction and reconstruction, and bridges.

Dividing total costs by total estimated harvest volume gives an average cost per thousand board feet (MBF) for each alternative. This cost-per-board-foot measure can be used to compare the overall financial efficiency of the alternatives. This cost is highest in Alternatives 4 and 6, which attempt to maximize timber harvest volume and thus accesses more economically marginal units (many requiring helicopter or long-span cable systems) with considerably more roads than the other alternatives. While Alternative 3 has the third highest total project cost, it minimizes new road construction relative to volume harvested

and has the lowest cost per MBF (Table Silv-5). Alternatives 2 and 5 have lower total project costs, but a higher cost per MBF than Alternative 3. Alternative 5 uses the least amount of helicopter logging, and has a goal of providing economic sales, whereas Alternative 2 spreads its harvest more equally between running skyline, other cable, and helicopter systems.

Table Silv-4
Summary of Timber Harvest Costs by Alternative

Alternative	Harvest Volume (MBF)	Transportation Costs * (Million $)	Construction Costs** (Million $)	Total Project Cost (Million $)
2	7,865	1.24	1.01	2.25
3	14,154	2.73	0.84	3.57
4	16,935	2.55	3.15	5.70
5	6,593	0.87	1.12	1.99
6	16,935	2.55	3.15	5.70

* Transportation costs include all costs not associated with capital investments or costs normally connected to road construction, such as: fall, buck, yard sort, load, haul, dump, raft, and tow.
** Construction costs include costs associated with road construction and reconstruction, such as: pit development, clearing, grubbing, embankment, haul, excavation; and related structures such as bulkheads, bridges, and culverts (from Table Transportation-2).

Timber values depend on several variables, including the type of logging system, tree species mix, and timber stand volume per area. A detailed financial review of all action alternatives is included in the project planning record. Table Silv-5 displays the results of this analysis by alternative. In this table, "pond log value" represents the delivered price of logs at the mill less the cost to manufacture them into useable products. Pond log values are closely related to log size, grade, and species.

Subtracting all associated costs from the pond log values for all proposed harvest units in each action alternative determines the estimated net timber value (stumpage). Consequently, individual units that may be uneconomical to harvest individually are offset by combining them with other units that are more economical to harvest. This results in less productive land or land where the timber has more defect being made more economically viable for timber harvest. Bringing these lands under management increases future timber yields and postpones entry into more environmentally sensitive areas. Alternatives 4 and 6 make the greatest contribution in this regard, but also have the lowest net value. Alternative 3 also includes these lands only if they are accessible from the existing road system.

Table Silv-5
Estimated Net Timber Values of the Alternatives

Alternative	Estimated Total Volume MBF	High Market Pond Log Value** Per MBF ($)	Low Market Pond Log Value ** Per MBF ($)	Total Project Cost* per MBF ($)	Estimated Net Value @ High Market Per MBF ($)	Estimated Net Value @ Low Market Per MBF ($)	Alternative Rank Order
2	7,865	521	189	286	235	-97	2
3	14,154	521	189	252	269	-63	1
4	16,935	521	189	337	184	-148	4
5	6,593	521	189	302	219	-113	3
6	16,935	521	189	337	184	-148	5

* Project costs from Table Silv-5 and Transportation-2
** Pond Log Values: Low market based on current market appraisals;
High market based on first quarter 1995 values and average Forest-wide species composition.
These values are for comparative purposes only.

These projected construction costs, transportation costs, and pond log values are estimates that are useful for comparing the alternatives, not actual costs. Because all action alternatives are measured against the same yardstick of estimated costs, it is appropriate to rank the alternatives in order by net value (either high market or current market). For the estimated high market condition, Alternative 3, which minimizes costs associated with road construction relative to the amount harvested, has the highest net value of all the action alternatives. Alternatives 2 and 5 are somewhat lower. Alternatives 4 and 6, with considerably higher transportation and construction costs, show a substantially lower net value for low and high market conditions, when compared with the other action alternatives. The low market value is based on current market conditions. These market scenarios are used to display the cyclical nature of timber markets, in essence a "snapshot" in time. They are not intended to display a final appraised stumpage value. Before the timber is sold, the volume within the units and road right-of-way will be cruised for total volume and appraised for total value.

Socioeconomics

Affected Environment

Socioeconomic Setting

The Luck Lake Project Area is on the northeast coast of Prince of Wales Island. It is accessible by road from communities on Prince of Wales Island, and secondarily, via the Alaska ferry system, from larger communities such as Ketchikan and Wrangell. However, while accessible to many potential users, survey information shows that the principal users are from the north Prince of Wales Island communities of Coffman Cove, Thorne Bay and Whale Pass (based on the community use information in the Communities section of the Forest Plan FEIS, pp. 3-529 to 3-680, as is the information below). Community use of the area, such as for recreation, hunting, or subsistence, is discussed in the Recreation, Scenery, and Subsistence sections of this chapter.

The communities of Coffman Cove, Thorne Bay, and Whale Pass have economies that are directly or indirectly reliant on logging. These communities began as logging camps, and although other means of employment have developed (such as commercial and sport fishing, education, and forestry), logging-related jobs are the mainstay. Based on 1995 data, the populations of the three communities are: Coffman Cove - 254; Thorne Bay - 650; and Whale Pass - 92. Median household incomes, based on 1990 census data, are: Coffman Cove - $44,063; Thorne Bay - $39,688; and Whale Pass - $49,583.

There is no comparable community-specific employment information available. The closest is subregional information for all north Prince of Wales Island communities combined (Forest Plan FEIS, pp. 3-514 to 3-516). In 1995, there were 447 wage or salary jobs in the subregion. Of these, 257 (57 percent) were wood products-related jobs. This is one of the highest ratios of logging-related jobs to all jobs in Southeast Alaska.

Environmental Consequences

Employment and Income Effects

Effects related to community uses of the area are discussed in other sections of this chapter, as noted above. The proposed action would have no direct or indirect employment or income effects other than for what is logging-related. To estimate the amount of employment and income likely to result from timber harvest alternatives, a simple conversion of board feet to jobs and income is made, using multipliers developed for Southeast Alaska. Table SE-1 below shows the employment and income estimates for the action alternatives. As would be expected, the higher the harvest, the more jobs and income that result.

Table SE-1
Logging-related Employment and Income by Action Alternative

	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
Employment (# jobs)	42	75	89	35	89
Income (Million $)	1.87	3.34	3.96	1.56	3.96

Source: Forest Plan FEIS, pages 3-479 to 3-480

Soils

The following discussions and analysis are based on and summarized from the Soil, Floodplain, Riparian, and Wetland Resources Report for the Luck Lake Project (1998) and Addendum (1999), and the Watershed Analysis for the Luck Lake Project Area (1998) and Addendum (2000). These reports include more detailed analyses and references to the scientific literature. A Forest-wide treatment of soils may be found in the Forest Plan FEIS, Chapter 3. Applicable soils direction is included in the Forest Plan, Chapter 4 and Appendix C. The unit and road cards (Appendices B and C of the Draft EIS and in Appendices 2 and 3 of the ROD for the Selected Alternative) contain additional site-specific implementation requirements .

The soils of the Luck Lake Project Area are predominantly underlain by till at elevations less than about 1,000 feet. The upper limits of glacial till on the valley sides of the Luck Lake watershed is 700 to 1,500 feet. The thickness of the till deposits is extremely variable, ranging from a few inches to 30 feet or more. As elevations increase and slopes steepen, soils are typically less than 20 inches thick and underlain by bedrock. On the broad, gently sloping ridgetops organic soils have accumulated, typically to depths of two to four feet. An overview of the geomorphology of the Project Area is included in the Karst Resources and Geology section of this chapter.

Affected Environment

Soil Productivity

Soil productivity in the Project Area is primarily a function of soil drainage and soil depth. Road construction and rock pit development cover areas of soil with rock and overburden, reducing the productivity of the site. Soil disturbance within harvest units can have a detrimental impact on soil productivity. Soil disturbances are areas where felling of trees or yarding of logs has displaced the surface organic mat.

Roads and rock pits currently occupy 506 acres or 1.4 percent of the Luck Lake Project Area (assuming a disturbed soil width of 40 feet for each road). If roads are abandoned, red alder will grow on most road surfaces of the Project Area. Approximately 18 percent of the road system (91 acres) is closed and is overgrown with alder or is in the process of being overgrown.

Forested, poorly-drained organic soils are extensive in the Luck Lake Project Area: 5,349 acres have been mapped. On the Luck Lake Project Area, 1,299 acres of forest on these sites have been logged. Concerns with timber harvest on these soils include the ability of the site to grow 20 cubic feet of wood (on average) per acre per year. The environmental consequences of timber harvest on these sites are discussed in the Water section of this chapter.

Approximately 64 acres of McGilvery soils have been mapped in the Luck Lake Project Area. These soils consist of well drained organic matter less than 20 inches thick over bedrock. Dragging logs across areas of thin McGilvery soils can physically displace the soil from a spot or yarding corridor. Field reconnaissance identified several small areas of McGilvery soils within and adjacent to proposed harvest units. Where soil displacement would likely exceed Regional Soil Quality standards, the area of McGilvery soil was not included in the harvest unit.

Surface Erosion and Mass Movement

The relatively thick organic mat covering most mineral soils in the Project Area helps prevent surface erosion. Where the organic mat is displaced or mineral soils exposed, surface erosion can occur. Yarding of logs can displace the organic mat and allow surface erosion of underlying mineral soils. In steep forested terrain with high soil water levels, mass wasting (landslide) is the dominant erosion process. Topographic, geologic, and soil conditions usually determine where a landslide will occur; rainfall is probably the principle triggering force determining when landslides will occur.

Steep forested terrain occurs throughout the Luck Lake Project Area. An inventory of landslides in the Project Area found a landslide rate of one slide per 2,812 acres of productive old-growth forest and one slide per 496 acres of harvested second-growth forest. The slides in old growth averaged 0.6 acres and those in second growth 0.2 acres. Over the 20-year period covered by the inventory, five 1-acre landslides occurred on nonforested land.

Naturally unstable areas in the Luck Lake Project Area include the lands between 700 and 1,500 feet elevation in the Luck Creek basin, the headwaters of the Coffman Creek watershed, and the avalanche area visible from Forest Development Road (FDR) 30 at Ratz pass. The majority of the old-growth landslides occurred in the east and west forks of Luck Creek.

The Forest Service uses a mass movement index for preliminary identification of potentially unstable sites in a Project Area. The highest hazard soils (most mineral soils on slopes over 72 percent, and some on slopes over 60 percent) are not included in the suitable timber base. All proposed harvest units with slopes over 50 percent gradient or with some indication of instability were field reviewed by a soil scientist. Numerous areas of instability were identified and excluded from proposed harvest units. The soil scientist's unit reconnaissance reports (contained in the planning record) document the changes made to the initial group of proposed harvest units. Ten proposed harvest units contain inclusions of areas with slopes greater than 72 percent considered to have a low landslide potential by the soil scientist and which are thus suitable for timber harvesting. These inclusions, identified on the unit cards (Appendix B of the Draft EIS or Appendix 2 of the ROD for the Selected Alternative) range in size from one to ten acres.

Environmental Consequences

Soil Productivity

Indicators of adverse effects on soil productivity include acres of new roads and rock pits, and soil disturbances over 100 square feet. These measures are displayed for each action alternative in Table Soils-1. For roads and rock pits, the analysis assumes 4.8 acres per mile of road, and one 2-acre rock pit for every 2 miles of road. Soil disturbances larger than 100 square feet, called soil displacements, are considered detrimental to soil productivity (Region 10 Soil Quality Standards). The analysis assumes five percent displacement for areas where partial suspension yarding is planned and two percent displacement for areas where full suspension is planned. These are rough estimates based on timber harvesting on very steep slopes; in all likelihood soil displacement on gentler slopes will be much less.

Table Soils-1
Effects on Soil Productivity by Action Alternative

Alternatives	Productivity Loss from Roads (acres) Temporary	Specified	Displaced Soils from Harvest (acres)	Rock Pits (number)
2	4	19	23	3
3	4	11	33	2
4	8	59	43	7
5	5	21	22	3
6	8	59	43	7

The intent of the Regional Soil Quality Standards is to maintain soil productivity within acceptable parameters. The standards allow up to 15 percent of the productive forest land to be in a detrimental condition. For harvest units on north Prince of Wales Island, typically less than five percent of the soils in steep slope timber harvest units are left in a detrimental condition. In addition, for the Luck Lake Project, marten and goshawk standards and guidelines require partial cutting for all harvest units; helicopter yarding will be required to harvest many of the partial cut units, further reducing potential detrimental effects. Soil displacements and other adverse impacts to soils within harvest units are anticipated to be within Soil Quality Standards.

Surface Erosion and Mass Movement

Harvest on over-steepened slopes (72 percent or greater) is generally avoided, as these lands are considered unsuitable for timber harvest. Forest Plan standards and guidelines allow harvest on over-steepened slopes when on-site analysis determines that the potential for adverse effects is low. Field reconnaissance by the soil scientist has identified specific areas with slopes 72 percent or greater that have low landslide potential. The proposed harvest on slopes over 72 percent by action alternative is: Alternative 2 - 18 acres; Alternative 3 - 42 acres; Alternative 4 - 43 acres; Alternative 5 - 17 acres; and Alternative 6 - 43 acres (Table Soils-2).

Table Soils-2
Acres of slopes over 72 percent gradient identified for timber harvest by the IDT Soil Scientist. (Field estimates)

Unit Number	Acres of Slopes over 72 %	Watershed Number	Included in Alternative
572-412	3	BT2A	3,4,5,6
572-425	1	B58A	3,4,6
581-417	10	C27B	3,4,6
581-422	2	C26C3	3,4,6
581-423	2	C27B	2,3,4,5,6
581-428	12	C26C3	2,3,4,5,6
581-449	4	C27B	2,3,4,6
581-452	8	C26C2	3,4,6
582-404	1	C27A	4,6

Landslide rates within the Project Area were discussed under "Affected Environment." Factors affecting the landslide rate in future harvest units include the amount of timber harvest on steep slopes and the amount of soil disturbance in harvest units. Log suspension requirements will reduce the amount of soil disturbance, and partial cut harvest is prescribed for all units, further helping to maintain the root mat in harvested areas.

The analysis here assumes that one landslide will occur in the next 20 years for each 496 acres of timber harvested (or, one landslide per year per each 9,920 acres of harvest.) The average size of the second growth landslides is 0.2 acres. The analysis also assumes that one 0.6-acre landslide will occur in the next 20 years for each 2,812 acres of old growth; and that five 1-acre landslides will occur in the nonforested areas of the Luck Lake Project Area.

Applying these assumptions to the alternatives, including Alternative 1 (no-action), results in essentially no difference in estimated landslide effects (occurring over the next twenty years) between alternatives. Landslides in second-growth areas (including existing second growth) range from 4.0 to 4.3 acres; landslides in old-growth areas range from 2.9 to 3.0 acres; and landslides in nonforested areas would be 5.0 acres. Overall, total estimated landslide acres range from 12.0 acres (Alternative 1) to 12.3 acres (Alternatives 4 and 6). More landslides will occur in second growth, but due to their smaller average size the difference in total acres between alternatives is slight.

Cumulative Effects

Soil Productivity

Assuming all suitable forest land in the Project Area is harvested by 2154, and extrapolating the amount of road needed to access the remaining suitable lands, the Project Area could have 139 miles of road (50 more miles than currently exist). This is about 675 acres of forest land occupied by roads, or 1.9 percent of the Project Area.

Mass Movement

The preceding analysis of landslides can be carried farther into the future on the same assumption of future timber harvest. Smaller slides within second growth would occur somewhat more frequently, and larger old-growth forest slides somewhat less frequently, but the difference in total landslide acres between harvesting the remaining suitable acres and not harvesting them would be insignificant. (See also the Water section of this chapter for cumulative watershed effects.)

Mitigation

Soil resource protection prescriptions, landslide mitigation measures, and applicable Best Management Practices (BMP's) are listed on unit and road cards in the Draft EIS (and in the ROD for the Selected Alternative) and in the soil resource reconnaissance reports. Due to the relatively thick organic mat covering most mineral soils, surface erosion is limited to detrimentally displaced areas, roads, stream banks and recent landslide tracks. Detrimentally displaced areas within timber harvest units are routinely slashed and seeded shortly after they occur. Slashing the disturbed site provides soil cover, reducing the force of raindrop impact and the length of exposed slope. Grass seeding and fertilizing the area further provides soil cover and provides some organic matter for soil rehabilitation. Other BMP's are intended to keep surface erosion to a minimum practicable amount.

Subsistence

The following discussions and analysis are based on the detailed subsistence information and analysis contained in the Forest Plan FEIS, Chapter 3: "Subsistence" and "Communities", Appendix H, and the "Deer Harvest Map" in the map packet. Additionally, the discussions are based on habitat capability models developed to compare relative impacts of action alternatives to a resource. The models were not intended to provide accurate estimates of animal abundance. Likewise, estimates of hunter success (ADF&G 1998) were based on hunter surveys and are extrapolated from a relatively small sample. Therefore, these data are used for instructional and comparative purposes only, and cannot be construed as precise and accurate measures of abundance. See also the Wildlife, and Fisheries section of this chapter for additional analysis of fish, deer, and other wildlife species.

Affected Environment

Subsistence and ANILCA

Subsistence is a broad term applied to many natural resource uses of rural Alaskans. In the Alaska National Interest Lands Conservation Act (ANILCA), subsistence is defined (in part) as: "the customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation" (ANILCA Sec. 803). ANILCA provides for the continuation of these uses "consistent with sound management principles, and the conservation of healthy populations of fish and wildlife" (ANILCA, Sec. 802). For many rural Alaskans, subsistence is a way of life and carries cultural and religious meaning. Identification, protection, and interpretation of cultural and historic resources on Federal lands are covered under other legislation, including the National Historic Preservation Act (see the "Other Resources" in the Introduction section of this chapter).

The analysis of subsistence uses and resources on National Forest System land, and of potential effects resulting from management activities, is required by ANILCA (Sec. 810). This analysis typically focuses on food-related resources, which are the ones more likely to be affected due to loss or alteration of habitats. The analysis also typically focuses on three factors: abundance and distribution of the resources, access to them, and competition for the use of them. Under ANILCA, if it is found that a significant restriction on subsistence resources may occur because of a specific project or cumulatively for a geographic area, additional analysis and findings are required.

The Forest Plan FEIS provides a comprehensive analysis of subsistence resources and potential effects, both Tongass-wide and for each rural community of Southeast Alaska. That analysis concluded that Forest-wide, under full implementation of the Forest Plan, the only subsistence resource that may, in the future, be significantly restricted is subsistence use of deer (Forest Plan FEIS, pp. 3-224 to 3-229; Forest Plan Record of Decision, pp. 58 to 59). The following discussion tiers to this analysis.

Subsistence Resources and Uses

Subsistence use of fish species within the Project Area is low compared to nearby stream systems such as Hatchery Creek and Sarkar Lakes. Salmon, primarily pink and sockeye, are the principal subsistence fish used in the Project Area.

The principal subsistence wildlife resources of the Project Area are deer, black bear, and small furbearers such as marten. However, except for deer, use of these species for subsistence purposes is relatively minor. Measured by weight, deer account for 21 percent

of subsistence food resources (Forest Plan FEIS, p. 3-224). Potential effects to any of these fish and wildlife species as subsistence resources are discussed under "Effects of the Alternatives" below.

Community use of deer for subsistence purposes is well documented and studied for the rural communities of Southeast Alaska (see Forest Plan FEIS, pp. 3-210 to 3-223 and 3-523 to 3-528). Community use of specific geographic areas for obtaining deer is estimated by wildlife analysis areas (WAA's). A WAA is an animal management unit developed by the State of Alaska. 97 percent of the Luck Lake Project Area falls within WAA 1420. Conversely, 81 percent of WAA 1420 is included within the Luck Lake Project Area. For the purposes of the wildlife analysis of Luck Lake alternatives, the Project Area is assumed to be represented by 83 percent of WAA 1420. The additional two percent is for the portion of the Project Area within WAA 1421.

Community use of each WAA for deer is displayed on the "Community Deer Harvest" map included with the Forest Plan FEIS (map packet). The map shows that three communities (or community groupings) each make up about 30 percent of the total use of WAA 1420: Coffman Cove, Craig and Klawock, and Ketchikan. No other community accounts for more than about five percent of the use. Community use is further discussed and displayed in the Forest Plan FEIS in the "Communities" portion of Chapter 3 (pp. 3-523 to 3-685) and in Appendix H. Appendix H identifies WAA's, by community, (ordered by highest to lowest use) that account for 75 percent of that community's deer harvest. Coffman Cove was the only community identified that harvested 75 percent of its deer from WAA 1420.

Based on the above justification, and reports which suggest that Coffman Cove residents depend on deer for food more than the average for other communities that subsistence hunt within the Tongass National Forest (32 percent of the total edible pounds of subsistence resources harvested by Coffman Cove households; Kruse and Frazier 1988), the community of Coffman Cove was identified as the primary community that took a substantial proportion of their deer harvest in WAA 1420. The discussion of potential effects on the subsistence use of deer in the Project Area will thus focus on Coffman Cove as the community that will potentially be significantly affected.

Environmental Consequences

Direct, Indirect and Cumulative Effects

The analysis of effects is based on the ANILCA categories previously mentioned: abundance and distribution, access, and competition. No restrictions on access to the Project Area for subsistence uses are anticipated. The area is accessible by passenger vehicle from Coffman Cove and other Prince of Wales Island communities (via forest development roads 30 and 3030), and the State ferry system connects Prince of Wales Island to Ketchikan and the mainland. The access management plan proposes closing some secondary roads within the Project Area (see discussion of access management in the Transportation section of this chapter). These closures would apply to motor vehicles only, and do not restrict access by other means.

Abundance and Distribution

With application of the riparian standards and guidelines of the Forest Plan, no significant adverse effects on salmon or trout species are anticipated under any alternative, or cumulatively (see Fish section of this chapter). Subsistence use of fish species is not expected to increase in the Project Area unless nearby streams like Hatchery Creek and Sarkar Lakes have harvest limits significantly reduced or are closed to subsistence/personal use fishing altogether.

For wildlife species, the use of small old-growth habitat reserves (part of the Forest Plan old-growth habitat conservation strategy) and species-specific standards and guidelines (including marten and goshawk) result in no significant adverse effects anticipated for wildlife species other than deer (see Wildlife section of this chapter).

Declines in habitat capability are measurable and will occur under all alternatives, including no action (see the Wildlife section of this chapter). Deer habitat capability in the Project Area has decreased by 40 percent due to timber harvest between 1954 and present day. These declines represent a cumulative trend that has occurred and will continue to occur with the harvest of old-growth timber. By 2154, deer habitat capability in the Project Area will have decreased by 50 percent from conditions in 1954, even if no additional timber is harvested.

Currently, a limited amount of data is available to directly assess the impacts of timber harvest activity on subsistence harvest of deer in the Luck Lake Project Area. Therefore, we are presenting a theoretical scenario based on 1997 deer densities (estimated with Forest Service habitat capability models), and 1997 deer harvest estimates (based on ADF&G hunter surveys). We chose to use the 1997 deer harvest levels to be comparable with the estimation of deer habitat capability calculated for 1997. Please note that this number is high when compared with the 8-year average harvest level (1989-1996) of 95 deer for the Project Area (83 percent of deer harvest within WAA 1420) (Forest Plan FEIS, page 3-371). Habitat models were not designed to estimate animal numbers, nor habitat capability beyond the scope of comparing project alternatives. Therefore, applying actual harvest statistics to the habitat capability estimates is reaching beyond the assumptions of the model.

The deer model estimated that the Project Area had a carrying capacity of approximately 990 deer in 1997. The model estimate was adjusted to reflect an overall reduction in deer density of 36 percent due to predation by wolves. The projected deer habitat capability in 1997, allowing for maintenance of a prey base for wolves, equaled 634 deer. Estimated annual human harvest is standardly set at 10 percent, because deer populations that exist at carrying capacity can withstand harvest of that magnitude without tending toward instability and without causing a decrease in hunter success or satisfaction (Flynn and Suring 1993). Using a 10% estimate for hunter-take in the Luck Lake Project area allows for the hunt of 63 deer in 1997. In 1997, 232 deer were legally harvested and reported in the Project Area (83 percent of deer harvest within WAA 1420) (ADF&G 1998). That level of harvest represents 37% of estimated deer, based on habitat capability in 1997. Even using the historical estimation of habitat capability of 1,062 deer in the Project Area in 1954 (with wolf predation considered), a legal harvest of 232 deer from WAA 1420 would be approximately 22% of the estimated deer abundance. Further reduction of deer habitat capability, by reduction of winter habitat (low elevation productive old-growth) and an increase in stands undergoing "stem exclusion", will increase the risk that availability of deer for subsistence harvest will be compromised. Reduction of deer habitat capability is highest with Alternatives 4 and 6, lowest with Alternative 2.

For key deer winter habitat, the most important habitat component in the Project Area, declines are minimized in several ways. Implementation under the Forest Plan requires 1,000-foot beach and estuary fringe no-harvest zones along all saltwater beaches and estuaries, the application of riparian buffers along all streams, and the location of a small old-growth habitat reserve in each VCU (major watershed). All these result in at least some protection of important deer winter habitat. The Luck Lake Project further minimizes effects to deer winter habitat by redesigning, and in one case relocating, two of the small old-growth habitat reserves to include more high value deer winter habitat (see also Biodiversity and Old

Growth section of this chapter). Moreover, all units in the Luck Lake Project Area are scheduled for partial harvesting, which has the potential, when done on a small scale, to reduce adverse effects on deer habitat compared to clear-cutting. Kirchhoff and Thompson (1998) concluded from their study of the effects of selection harvesting on deer habitat in Southeast Alaska that removing small numbers of trees (<30/hectare) distributed evenly throughout the unit (1-6 trees/0.2 hectare) was most effective in maintaining deer winter range. Although the Forest Plan standards and guidelines specifications for canopy retention for goshawk and marten will result in more extensive tree removal than Kirchhoff and Thompson's (1998) recommendation, some maintenance of deer winter habitat may occur.

Because previous timber harvest and the resulting loss of habitat capability in the Luck Lake Project Area has been extensive, additional timber harvest in the Project Area will further lessen habitat capability. Therefore, although this project alone would not have a noticeable impact on subsistence deer hunting, cumulative past harvest within the Project Area has resulted in the considerable likelihood for impacts to subsistence deer hunting and any future harvest, including this project, would increase the likelihood of impacts. Our current analysis supports previous analyses (1989-94 Long-term Sale FEIS, CPOW FEIS, Forest Plan FEIS), which showed that demand for deer exceeded harvestable numbers (based on habitat capability) by the mid- to late-1980s. Deer habitat capability in the Project Area is predicted to further decline to levels lower than which can sustain subsistence hunting in the future.

Competition

Under ANILCA, a priority for use will be granted to rural users if restrictions on use of a resource are necessary. If further restrictions on a use are necessary, then that is the point at which a significant restriction on subsistence uses may occur. Such a restriction could occur from either reduced abundance or increased competition.

In Game Management Unit 2 (GMU 2), hunter success was reported as stable for a ten-year period, but decreased in 1997 (ADF&G 1997, USDA 1998). Hunter success in WAA 1420, however, was slightly higher in 1997 than overall hunting success in GMU 2 (58.7 percent versus 54.3 percent; ADF&G 1997, 1998). In 1998, deer hunting success in GMU 2 rebounded from the apparent low of 1997. Hunter effort/deer, however, increased in WAA 1420 from 3.84 days/deer in 1997 to 5.31 days/deer in 1998.

The above analysis can be carried one step further by subtracting the influence of non-rural hunters from the deer habitat capability estimate. During 1997, 26 percent of the hunters in WAA 1420 were non-rural. Those non-rural hunters took 20 percent of the deer legally harvested from WAA 1420. Their hunting effort in the area represented 34 percent of the total days hunted by all hunters. Based on deer abundance estimates, calculated with the deer habitat capability model, non-rural hunters took 7 percent of the available deer population in the Project Area in 1997. If non-rural hunters were eliminated from the hunt in 1997, legal deer harvested from WAA 1420 would have still far exceeded the 10 percent assumed sustainable harvest. Furthermore, in 1998, non-rural hunters accounted for 36 percent of the hunters in WAA 1420, took 37 percent of the legal harvest of deer, and hunted only 22 percent of the total days. Non-rural deer hunter take alone may approach the theoretical limits of sustainability in WAA 1420. It is possible that sometime in the future, non-rural hunters will be restricted from taking deer in WAA 1420.

A new Alaska State Ferry Terminal is scheduled to be constructed in the community of Coffman Cove with an anticipated completion date of June 2002. With the new ferry sailing, a 2.1 percent increase in visitors is anticipated (Miller 1996). With easier accessibility to WAA 1420, due to the establishment of the ferry terminal in Coffman Cove, increased hunting pressure is expected in the Project Area in the future.

EIS Determinations

ANILCA Section 810 (a)(3) requires that when a significant restriction may occur, determinations must be made with regard to whether:

- such a significant restriction of subsistence uses is necessary and consistent with sound management principles for the utilization of public lands;
- the proposed activity will involve the minimum amount to public lands necessary to accomplish the purposes of such use and occupancy, or other disposition; and
- appropriate steps will be taken to minimize adverse impacts upon subsistence uses and resources resulting from such actions.

Necessary, Consistent with Sound Management of Public Land

The alternatives proposed in this Final EIS have been examined to determine whether they are necessary, consistent with sound management of public lands. In this regard, the National Forest Management Act (NFMA) of 1976, the ANILCA , the Tongass Timber Reform Act (TTRA), the Alaska Regional Guide, the Forest Plan, the Alaska State Forest Resources and Practices Act, and the Alaska Coastal Zone Management Program have been considered.

Management activities on the National Forest must provide for the multiple-use and sustained yield of renewable forest resources in accordance with the Multiple-use Sustained Yield Act of 1960. Multiple-use is defined as "the management of all the various renewable surface resources of the National Forest System so that they are utilized in the combination that will best meet the needs of the American people" (36 CFR 219.3). The alternatives presented in the Final EIS represent different ways of managing the Luck Lake Project Area resources in combinations that are intended to meet the needs of the American people. Each provides a different mix of resource uses and opportunities, and each has some potential to affect subsistence uses. Given the framework and emphasis of each alternative, the potential restrictions associated with each alternative are necessary, consistent with sound management of public land.

ANILCA placed an emphasis on the maintenance of subsistence resources and lifestyles. However, it also emphasized providing for adequate opportunity for satisfaction of the economic and social needs of the State of Alaska and its people, and recognized public lands necessary and appropriate for more intensive uses. ANILCA also required the Forest Service to make available for harvest 4.5 billion board feet of timber per decade from the Tongass National Forest. The TTRA removed the 4.5 billion board foot requirement from ANILCA, but directed the Forest Service to seek to meet market demand for timber to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, and subject to applicable law.

As described in Appendix A of this Final EIS, the proposed alternatives are necessary as a component of the timber management program designed to implement the Forest Plan and meet TTRA direction. The proposed alternatives provide various options that can help meet the objectives of the Forest Plan and TTRA for timber harvests, while also providing reasonable protection measures for forest resources, especially for subsistence. They are consistent with the Forest Plan, laws, regulations, policies, public needs, and the capabilities of the land.

Amount of Land Necessary to Accomplish the Purpose of the Activity

The amount of public land necessary to implement each alternative is (considering sound multiple use management of public lands) the minimum necessary to accomplish the purpose of that alternative. Rural communities use the forested portion of the Luck Lake Project Area for subsistence deer hunting and possibly other purposes. It is not possible to reduce harvest in one area and concentrate it in another without impacting one or more rural communities' important subsistence use areas. In addition, harvestable populations of game species may not be maintained in a natural distribution across the Forest if harvest was concentrated in specific areas. A well-distributed population of species is required by the Forest Service regulations, which implement the NFMA.

Forest Plan

The Forest Plan allocated many of the important subsistence use areas to land use designations that are not suitable for timber harvest. Of the 30,435 acres of the Project Area on National Forest System lands, the Forest Plan allocated 17 percent to the non-development land use designations Old-growth Habitat and Semi-remote Recreation. Programmed timber harvest is not allowed in these areas. The Forest Plan allocated the remaining 83 percent of the National Forest System lands in the Project Area to Timber Production and Modified Landscape land use designations. These designations provide for resource use and development for commodity resources such as timber. The Forest Plan standards and guidelines removed additional acres, important to subsistence, from the suitable land base including 1,000-foot buffers around the beach and all estuaries, and specific riparian buffers along all Class I, II, and III stream to protect fish habitat and water quality.

Each alternative provides a sound location and design for all harvest units and roads. Given the framework and emphasis of a given alternative, the minimum amount of land and roading was used to resolve resource concerns while meeting the purpose and need for the project in a practical and efficient manner.

The Luck Lake Project involves the minimum amount of public land necessary and strikes a balance between meeting the needs of the public and protecting forest resources. Choosing any of the alternatives in the Luck Lake Project (including the No-action Alternative), or locating the harvest in another location on the Tongass National Forest, would not avoid or substantially lessen the risk to subsistence use in the future.

Reasonable Steps to Minimize Adverse Impacts on Subsistence Uses and Resources

The Forest Plan took considerable steps to minimize the impacts to subsistence use and resources. Traditional use areas include the beach fringe and stream buffers protected in the Forest Plan. The Luck Lake Project proposes to change the boundaries of the small old-growth reserve in VCU 581 and the location and boundaries of the reserves in VCU's 582 and 583 to include more low-elevation, productive old growth. This change would strengthen the old-growth reserve strategy and help minimize adverse impacts to subsistence uses. The overall Forest Plan land use designation strategy, along with the two-age harvest prescriptions, road access management strategy, and other measures, represent reasonable steps to minimize adverse impacts to subsistence resources.

Each alternative framework represents a reasonable balance between projected need for Tongass timber from the Project Area to help meet Forest Plan, ANILCA, and TTRA timber-related objectives, and continued protection of subsistence uses and resources. Impacts to subsistence have been minimized through the development of individual harvest units and road corridors, and through the formulation of alternatives.

Many of the mitigation measures for the Luck Lake Project, identified on the unit and road cards (Appendices B and C of the Draft EIS and Appendices 2 and 3 of the ROD for the Selected Alternative), are designed to maintain fish and wildlife habitat productivity at the highest possible level, while still providing a supply of timber.

Final EIS Conclusions

The ROD for the Luck Lake Project will include a final finding about any significant restrictions on subsistence uses that may result from implementation of the Selected Alternative. Below is a summary of the Final EIS evaluation and findings.

1. The direct effects from the alternatives in the Luck Lake Project do not present a significant possibility of a significant restriction of subsistence uses of deer, black bear, marten, wolf, otter, marine mammals, waterfowl, salmon, other finfish, shellfish, and other foods.
2. The potential foreseeable and cumulative effects from implementing the Forest Plan through the entire rotation period, including the no-action and action alternatives in the Project Area, do not present a significant possibility of a significant restriction to subsistence uses of black bear, marten, wolf, otter, marine mammals, waterfowl, salmon, other finfish, shellfish, and other foods. However, a significant possibility of a significant restriction may exist for deer.

Threatened and Endangered Species

The following discussion and analysis are based on maps and queries, and summarized from the Biological Assessments required for all threatened and endangered species, and the Biological Evaluations required for Forest Service sensitive species. Direction for threatened, endangered and sensitive species is contained in the Forest Plan, Chapter 4.

Affected Environment

Federally listed threatened and endangered species are those plant and animal species formally listed by the U.S. Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS), under the authority of the Endangered Species Act of 1973, as amended. Candidate species are those being considered for listing as threatened or endangered by the USFWS and NMFS. The State of Alaska has an Endangered Species law, which authorizes the commissioner of the Alaska Department of Fish and Game (ADF&G) to list Alaska endangered species. The Regional Forester can also designate species occurring in National Forests as "Sensitive."

Threatened or Endangered Species

No threatened, endangered, or candidate fish species are known to occur in streams within the Project Area. However, some stocks of Federally listed salmon from Washington, Oregon, and California may migrate past the Project Area in the saltwater of Clarence Strait. No threatened, endangered, or candidate plant species are known to occur in the Project Area.

Biological Assessments have been prepared to evaluate the effects of the proposed action on two federally listed threatened or endangered species. These species are discussed below, based on the information in these assessments. A Biological Assessment for the American peregrine falcon has been submitted to USFWS, however it was delisted on August 25, 1999 and has been removed from the discussion below. Biological Assessments for the humpback whale and Steller sea lion have been submitted to NMFS. No other threatened, endangered, or candidate birds or mammals are known to occur in the Project Area.

The Arctic peregrine falcon was delisted in 1994. The Arctic peregrine falcon is primarily associated with the area north of the Brooks Range and Seward Peninsula in arctic Alaska. It occurs in Southeast Alaska only during migration periods.

Humpback Whale

Humpback whales *(Megaptera novaeangliae)* are occasionally found in waters bordering the Project Area. The local distribution of humpbacks (listed by NMFS as Endangered) in Southeastern Alaska appears to be correlated with the density and seasonal availability of prey, particularly herring *(Clupea harengus)* and euphausiids (shrimp-like crustaceans). Important feeding areas include Glacier Bay and adjacent portions of Icy Strait, Stephens Passage/Frederick Sound, Seymour Canal, and Sitka Sound. Other areas of Southeastern Alaska may also be important for humpbacks and need to be evaluated. None of these are within or adjacent to the Project Area.

Steller Sea Lion

Steller sea lions (*Eumetopias jubata*) are also occasionally found in waters bordering the Project Area. The Steller sea lion (listed by NMFS as Threatened) ranges from Hokkaido, Japan, through the Kuril Islands and Okhotsk Sea, Aleutian Islands and central Bering Sea, the Gulf of Alaska, Southeast Alaska, and south to central California. Information on Steller sea lion population trends in Southeast Alaska is limited, but suggests that Steller sea lion populations are stable in Southeast Alaska. There are no known Steller sea lion haul out areas in the Project Area; the closest is located on the south tip of Grindall Island (at the south tip of Kasaan Peninsula), about 40 miles to the south.

Sensitive Species

Species listed as sensitive by the Regional Forester that may occur within the Project Area are Peale's peregrine falcon, Queen Charlotte (northern) goshawk, and the trumpeter swan. However, only the Trumpeter swan and goshawk are expected to occur in the Project Area for extended periods of time. Biological Evaluations for the Project Area have been completed, and focus on the likelihood of disruption of the existence and general distribution of sensitive species in and near the Project Area. These are summarized below. *Note: The Alaska Regional Forester removed the Choris bog orchid (Platanthera chorisana) from the sensitive species list on May 11, 1999; therefore we did not include it in our final analysis.*

Trumpeter Swan

The trumpeter swan *(Cygnus buccinator)* is the largest waterfowl species in the world. Its present range is only a vestige of the once vast region of North America that it frequented in both summer and winter. Trumpeter swans breeding in Alaska spend the winter along the Pacific Coast from the Alaska Peninsula to the mouth of the Columbia River, where they take advantage of open waters of saltwater estuaries and freshwater lakes and rivers. Trumpeter swans are present in the Project Area primarily during the fall and early spring migration periods and during winter.

Trumpeter swans arrive in the area in mid-October as they are migrating south. Numbers increase as migration continues. Swans typically leave for their breeding area by mid-April. Records show swans using Luck Lake during the winter and during spring and fall migration. Swans that spend the winter usually move to estuaries or saltwater-influenced lakes such as Sweetwater Lake after freeze up. Swans have not been reported during the summer.

Queen Charlotte Goshawk

The Queen Charlotte goshawk (*Accipiter gentilis laingi*) is a raven-sized raptor associated with forests having tall trees and dense canopies. These features allow goshawks to hunt beneath the tree canopy, and to capture prey before the prey escapes into the trees or shrub layer. The dense canopy in tall trees fosters a more abundant prey species population and provides a microclimate suitable for nesting. In southern Southeast Alaska, goshawks forage over home ranges that are typically 10,000 to 50,000 acres (Iverson et al. 1996). Home ranges are likely smaller, and breeding density higher in landscapes where high quality hunting stands are more concentrated (Crocker-Bedford 1998).

The northern goshawk has been listed as a Species of Concern for all of its range, including the Queen Charlotte subspecies, which is present in Southeast Alaska. Following a petition for listing, and appeal of an initial not warranted determination, the USFWS issued a 1997 decision that listing the species as threatened or endangered at this time is not warranted.

Broadcast and overlook surveys were completed on 49 points in portions of the Luck Lake Project Area in 1997, following Tongass National Forest protocols for the northern goshawk. Of the 43 potential harvest units, 36 contained at least one broadcast or overlook station.

Field crews found no goshawk nests. One goshawk detection was made on 7 April, 1997, in the vicinity of Unit 572-404, and again on 16 July, 1998. Follow-up surveys in the area, during the 1999 breeding season did not locate a nest or record additional goshawk detections. Multiple goshawk sightings were made near units 581-423 and 581-444 during the 1999 nesting season. Goshawk behavior observed near these units indicates a probable nest site in this vicinity, although a nest has not been located. Further goshawk surveys are planned for this area.

Environmental Consequences

Effects on Threatened or Endangered Species

The following analyses include discussions of the relevant mitigation measures from the Forest Plan. An additional mitigation discussion at the end of this section, as is included in most other Chapter 3 sections, is therefore not included.

None of the alternatives are anticipated to adversely affect the humpback whale or Steller sea lion. Biological Assessments for each species are included in the project planning record, and the effects analyses for each are summarized below.

No effect on the population or habitat of the Arctic peregrine falcon (delisted in 1994) or the American peregrine falcon (delisted in 1999) is anticipated from any alternative.

Humpback Whale

No direct, indirect, or cumulative effects on whales from implementation of forest management activities under any alternative are anticipated. Forest Plan standards and guidelines for threatened and endangered species provide for the protection and maintenance of whale habitats. All activities will be conducted in a manner consistent with the Marine Mammal Protection Act, the Endangered Species Act, and National Marine Fisheries Service regulations for approaching whales, dolphins, and porpoise.

One potential indirect effect has to do with the use of log transfer facilities (LTF's). A portion of the logs harvested from the Luck Lake Project are likely to be transported using existing, permitted LTF's. Two types of boat activity associated with LTF's, log raft towing and recreational boating by workers, may have an effect on whales. Log raft towing routes are generally well established, and adverse effects from log raft towing have not been documented. Recreational boating activity from the community of Coffman Cove varies between seasons and years. Whatever additional boating may occur from workers connected with LTF transfer of logs from the Luck Lake Project would likely be indistinguishable from total recreational use.

Steller Sea Lion

No areas within the Project Area have been listed by NMFS as critical habitat for Steller sea lion. No direct or indirect effects on sea lions from implementation of forest management activities under any alternative are anticipated. Forest Plan forest-wide standards and guidelines for Threatened and Endangered species provide for the protection and maintenance of sea lion habitats. All activities will be conducted in a manner consistent with the Marine Mammal Protection Act, the Endangered Species Act, and National Marine Fisheries Service regulations for approaching seals and sea lions.

Effects on Sensitive Species

Trumpeter Swan

All Forest Plan standards and guidelines for trumpeter swan are incorporated. These direct avoiding any disturbance of Trumpeter swans, particularly during nesting, brood rearing, and wintering periods. Road building and timber harvesting will not occur within 0.5 miles of Luck Lake when swans are present (normally from November 1 to April 1). No direct or indirect effects are expected to impact Trumpeter swan as a result of this Project, and no cumulative effects are anticipated.

Queen Charlotte Goshawk

All action alternatives will harvest stands capable of providing nesting and/or foraging habitat for goshawks (i.e., old-growth forests). The action alternatives reduce old-growth forest in the Project Area between three and seven percent from existing conditions. Forest Plan requirements for maintaining 30 percent or greater canopy closure for goshawks apply to VCU's 572 and 581. These result in the partial cut prescriptions for all units in these VCU's. Units in VCU 582 (which are only in Alternatives 4 and 6) will maintain a more limited stand structure under Forest Plan standards and guidelines for marten.

No goshawk nesting sites have been confirmed in or near the Luck Lake Project Area, however a probable goshawk nesting territory, in the vicinity of units 581-423 and 581-444, was discovered in June, 1999. Goshawks are extremely difficult to locate and it is possible that the Project Area includes more breeding territories. Any goshawk nest found during field reconnaissance or unit layout will be protected from harvest by implementing Forest Plan standards and guidelines for goshawks. These require the maintenance of an area of not less than 100 acres of productive old-growth forest (if it exists) generally centered over the nest tree or probable nest site, preferably with a multi-layered, closed canopy and providing foraging opportunities for young goshawks. No commercial timber harvest is permitted, and no continuous disturbance likely to result in nest abandonment is permitted within the surrounding 600 feet from March 15 to August 15. Activity restrictions are removed for active nests that become inactive or are unsuccessful.

Goshawk habitat management within the Forest Plan and Record of Decision depends primarily on extensive amounts of forest designated for permanent protection from timber harvest. Most of the Tongass National Forest is now protected from timber harvest for a variety of reasons, including large, medium and small Old-growth Reserves for wildlife habitat, 1,000-foot beach buffers, remote recreation areas, special interest areas, and Wilderness Areas. Furthermore, much of the suitable timber base (where timber harvest is allowed to occur) of the Tongass National Forest, including all National Forest System land within the Project Area, has been designated for a 200-year rotation. This means that the second-growth forest will be allowed to develop into intermediate quality foraging habitat (100-200 years old) rather than being reharvested after only 120 years. The 200-year rotation will also slow the rate that old growth is being removed, which will provide more time for monitoring to verify the efficacy of the management system for goshawks. Because of the old-growth reserve strategy put forth by the Forest Plan, no direct, indirect, or cumulative impacts to the viability of Northern goshawks is expected.

Transportation

Affected Environment

Access to Prince of Wales Island and the Luck Lake Project Area is by small plane, ferry, and boat. A ferry terminal for the State of Alaska Marine Highway System is located at Hollis, south of the Project Area. The road network on Prince of Wales Island originally developed as a result of timber harvest starting in the mid-1950's. The road system connects the Project Area to Thorne Bay, Craig, Klawock, and Hollis in the south and Coffman Cove, Naukati, and Whale Pass in the north. Forest development road (FDR) 30, the major route through the Project Area, and FDR 3030, link Thorne Bay to Coffman Cove.

Forest Road System

National Forest roads in the Luck Lake Project Area are classified based on current or anticipated use into one of three maintenance levels. (Roads may also be obliterated or otherwise returned to an unroaded condition after use.) Maintenance levels incorporate traffic service levels, as indicated in the following definitions. Applicable maintenance levels for the Project Area are:

- Maintenance Level 1 (Traffic Service Level D) – Level 1 is assigned to intermittent-service roads during the time they are closed to vehicular traffic. The closure period must exceed one year. Roads are closed by bridge removal, barrier ditch, or organic encroachment and are monitored for resource protection. Basic custodial maintenance is performed to perpetuate the road and to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are "prohibit" and "eliminate" motor vehicle traffic. These roads may be open and suitable for non-motorized uses.
- Maintenance Level 2 (Traffic Service Level C) - Roads are maintained for high-clearance vehicles and monitored for resource protection. Traffic is normally minor, usually consisting of (or a combination of) administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are (1) "prohibit" or "eliminate" passenger cars or (2) "accept" or "discourage" high-clearance vehicles.
- Maintenance Level 3 (Traffic Service Level B) - Roads are maintained for travel by a prudent driver in a standard passenger vehicle and are subject to the provisions of the Highway Safety Act. Road use is by administrative and passenger vehicles, and logging trucks. User comfort and convenience are not considered priorities.

  Level 3 roads are typically low speed, single lane with turnouts and spot surfacing. Some roads may be surfaced with either native or processed material appropriate traffic management strategies are either "encourage" or "accept". "Discourage" or "prohibit" strategies may be employed for certain classes of vehicles or users.

The Luck Lake Project Area currently has 88.3 miles of roads on National Forest System lands. Of these, 28.2 miles are closed (level 1) and 60.1 miles are open (either level 2 or level 3). These figures exclude roads 3030700 and 3030720, as both roads are outside the Project Area. FDR 30 and FDR 3030 are generally maintained for use by passenger vehicles. See the Luck Roads Existing Condition Map in Chapter 2.

Road Condition Surveys

Forest Service personnel have conducted road condition surveys on many of the existing roads in the Luck Lake Project Area. These surveys supply detailed information about each road surveyed, including:

- whether the road is drivable
- number, size, and condition of drainage structures and bridges
- barriers to vehicle access (vegetation, barrier ditches, pulled bridges, slides, etc.)
- maintenance requirements

This information is used to (1) identify maintenance trends, (2) provide information for problem analysis, and (3) set priorities for scheduling and funding work. While many of the roads within the Luck Lake Project Area have been surveyed, a number of surveys are yet to be conducted. Due to the time and expense of obtaining this information at this time, the remaining road conditions surveys in the Luck Lake Project Area will not be completed before the Final EIS is issued.

Log Transfer Facilities (LTF's)

The transportation of a portion of harvested timber on the Project Area may involve transporting the logs to saltwater, then transferring them to the water (or barges) at an LTF and towing them to a sort yard for sorting. Finally, the logs would be moved to processing sites such as the sawmill at Ward Cove or others in Southeast Alaska. Eight existing LTF's near the Project Area were considered. These LTF's are located at Coffman Cove (on Coffman Cove), Whale Pass (on Whale Passage), Thorne Bay (on Thorne Bay), Naukati (on Tuxekan Narrows), Winter Harbor (on Tuxekan Passage), Tolstoi (on Tolstoi Bay), and two in Klawock (on Klawock Inlet). The Coffman Cove, Whale Pass, Thorne Bay, Naukati, and Winter Harbor sites are being cleaned-up as part of the Ketchikan Pulp Company Long-term Contract Settlement Agreement. The Whale Pass, Naukati, Winter Harbor sites will be administered by the Forest Service in the future and may be available in time for this project. The Coffman Cove and Thorne Bay sites will not be administered by the Forest Service. We currently do not know if these two sites will be operated as LTF's in the future, however it is possible. No new sites are proposed for this project.

The Tolstoi and Klawock LTF's are privately owned, permitted sites. The Tolstoi facility is a low-angle ramp, while the two facilities in Klawock are land-to-barge facilities (see below). The Forest Service is currently assessing the permit requirements for the future operation of the Whale Pass, Naukati, and Winter Harbor LTF's. Future plans for the Whale Pass and Naukati sites include replacing the existing A-frame structures with a low-angle ramp and a land-to-barge facility, respectively. A land-to-barge facility is also planned for the Winter Harbor site. All permits will be in place before logs can be transported at these facilities. LTF permit guidelines require yearly monitoring of active LTF sites. This involves underwater dives to measure the amount of bark accumulation. The owners conduct monitoring on each private site and file the results with the EPA and Alaska Department of Environmental Conservation.

Log Transfer Methods

Land-to-Barge

The land-to-barge transfer system requires a deep water bulkhead for the barge mooring facility. Barge operations require a minimum low tide depth of 25 feet. A loader loads the logs directly onto the barge. Barges can also load logs floating in the water using on-board cranes.

Low-angle Ramp

A low-angle ramp consists of a ramp constructed down the beach from the extreme high tide mark to the extreme low tide mark, allowing forked log loaders to drive down the ramp and place the log bundles into the water. The structure is generally constructed of shot rock embankment.

Environmental Consequences

The effects of the transportation system on other resources are considered in the specific resource sections (Fisheries, Soils, Subsistence, Water, and Wildlife). This section focuses on the effects of each alternative on the transportation system, and discusses post-project access management. None of the alternatives will have an adverse effect on the future development of a major transportation and/or utility system between Little Ratz Harbor and Coffman Cove. The Luck Lake Project does not include a proposal for or analysis of a state road corridor or any other transportation or utility system project within the Transportation/Utility System Land Use Designation.

Road Development

Table Transportation-1 displays the miles of new and reconstructed roads by alternative. In most cases, new road construction consists of extending roads less than one mile. The extension of roads 3030110 and 3030720, and construction of roads 3030210 and 3030360, are each greater than one mile (See road cards in Appendix C of the Draft EIS for details on each road segment and in Appendix 3 of the Record of Decision for details on roads in the Selected Alternative.). Road reconstruction consists of roadbed and ditch line repairs, culvert or bridge replacement, and resurfacing. Temporary roads (usually short spurs) are closed and/or obliterated after the completion of harvest.

Alternatives 4 and 6 have considerably more road construction and reconstruction than the other alternatives, including approximately 1.6 miles of new construction and 3.1 miles of reconstruction that would occur outside the Project Area. Alternative 3 requires the least miles of new road construction, and has the fewest miles of roads overall, slightly less than Alternative 2.

Alternatives 4 and 6 would extend FDR 3030110 into the Baird Peak area for 1.6 miles and FDR 3030115 for 1.0, and Alternative 2 for extends FDR 3030110 into this area for 0.7 miles.

Table Transportation -1
Miles of New and Reconstructed Road by Action Alternative

	Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6	
	New	**Recon**	**New**	**Recon**	**New**	**Recon**	**New**	**Recon**	**New**	**Recon**
System Roads	3.9	3.6	2.3	4.9	12.3	10.1	4.3	3.7	12.3	10.1
Temporary Roads	0.9	N/A	0.8	N/A	1.6	N/A	1.0	N/A	1.6	N/A
Totals	4.8	3.6	3.1	4.9	13.9	10.1	5.3	3.7	13.9	10.1

SOURCE: GIS query

Table Transportation-2 provides a summary of the costs associated with road construction, reconstruction and maintenance (includes pre-haul and post-haul maintenance). Existing roads not requiring reconstruction generally need some form of pre-haul maintenance, such as blading and shaping the existing road surface, minor drainage repairs, and roadway brushing. Post-haul maintenance is discussed in the next section below.

Table Transportation -2
Transportation Costs by Action Alternative

	Alternative 2		Alternative 3		Alternative 4		Alternative 5		Alternative 6	
	Mile	Cost MM$	Mile	Cost MM$	Mile	Cost MM$	Mile	Cost MM$	Mile	Cost MM$
System Roads	3.9	0.67	2.3	0.44	12.3	2.26	4.3	0.81	12.3	2.26
Temporary Roads	0.9	0.08	0.8	0.08	1.6	0.15	1.0	0.10	1.6	0.15
Reconstruction	3.6	0.18	4.9	0.24	10.1	0.62	3.7	0.13	10.1	0.62
Maintenance		0.08		0.08		0.12		0.08		0.12
Total Project Costs		1.01		0.84		3.15		1.12		3.15

Rock Pits

Existing rock pits will be used where possible. Any new rock pits will be located during sale layout and will follow applicable standards and guidelines, BMP's, and VQO's. The IDT process will be followed when locating all new rock pits.

Access Management

After the completion of harvest activities, roads are managed as necessary to control the type of use and kind of traffic. This is called access management. Road access is managed to prevent damage to the roadway, and to meet objectives for resources such as fish, water quality and wildlife, while maintaining public uses and access for timber management and related activities. The Thorne Bay Ranger District's access management program includes public and agency involvement, and interagency evaluation of road management objectives. The Luck Lake IDT identified the following goal for the Luck Lake access management plan:

> *To meet Forest Plan standards and guidelines while addressing the economic and social needs of island communities and residents, and meeting administrative needs.*

To meet this goal, we identified key objectives for the plan and a strategy for analyzing each road segment.

Key Objectives

1. Using information from scoping comments, Draft EIS comments, subsistence testimony, public and interagency meetings, and internal sources, identify:

   - community access roads.
   - long-term access roads, such as those providing access to high use or developed recreation sites, to hunting and subsistence food gathering areas, and to forest administration sites.
   - short-term access roads, such as those providing access to salvage sale opportunities and timber sale improvement activities.
   - high resource concern roads, where eliminating access would mitigate impacts to one or more forest resource (wildlife, fish, soils, water, etc.).

   Community access and high resource concern roads are listed on Table Transportation-3.
2. Minimize overall maintenance costs.
3. Identify deferred maintenance costs.

Strategy for Meeting the Goals

The IDT first identified the current condition of a road segment. Next, we identified the objective(s) for that segment (from Key Objectives, above). Based on the objectives, we prescribed a travel management strategy and road management objective (RMO) for the segment. In cases when a road segment had two or more conflicting objectives (e.g. a community access road with high resource concerns), the team prioritized the objectives before prescribing a travel management strategy and RMO. The IDT adopted the interim RMO definitions for open, stormproofed, stored, and decommissioned roads (see Table Transportation-4).

In two cases, conflicting objectives were resolved by deferring implementation of the RMO for three years. During this time, FDR 3000336 will be left open to provide access for thinning activities and FDR 3030110 will be left open for approximately one mile past the Eagle Creek Bridge, providing access for thinning and salvage activities.

Many of the existing roads within the Project Area are not in the haul route for any proposed units, and implementing the access management plan on these roads cannot be funded through the timber contract. As each project road would need to compete with roads outside the project for funding, the IDT prioritized the road closures. Roads or road segments with the highest priority are the high resource concern roads listed on Table Transportation-3. Roads in need of immediate treatments or with high resource concerns were given highest priority, while roads in good condition were given lower priority. We are now working to identify funding sources to implement the access plan on these roads. Such funding may include 1) a potential legislative funding package to fix problems identified in road condition surveys, 2) Jobs in the Woods program, or 3) other appropriate Forest Service road funds. Depending on the sources for and amount of funding available, full implementation of this access management plan may not be completed for a number of years.

Some existing roads within the Luck Lake Project Area are currently covered with alder and undrivable, although the culverts have not been removed. These roads (identified in the road cards) will be evaluated on a case-by-case basis to determine whether opening the road then removing the culverts and properly storing the road would have fewer adverse impacts than leaving the road in its aldered state.

Table Transportation-3
Community Access and High Resource Concern Roads

Community Roads*	High Resource Concern Roads	
Road #	Road #	Area of Concern
3000000	3000310	MP 1.08 to end
3000328	3000328	MP 1.0 to end
3000330	3000329	entire road
3030000	3000336	MP 2.05 to end
3030100-1	3030100-2	MP 1.24 to end
3030100-2	3030108	entire road
3030105	3030200-2	MP 2.33 to end
3030110-1	3030270	entire road
3030110-2	3030300	MP 4.07 to end
3030118	3030350	entire road
3030200-1	3030351	entire road
3030200-2	3030356	entire road
3030300	3030360	entire road
3030400	3030362	entire road
3030420	3030400	MP 2.16 to end
3030421	3030435	MP 0.68 to end
3030423	3030440	entire road
3030600-1	3030720	entire road
3030600-2		
3030640		

* identified through USFS data and public comments

Travel Management Strategy

The travel management strategy for each road can include one or more of the following categories:

- Encourage
  Motor vehicle use is encouraged by appropriate signing, public notification, and active maintenance of the road prism.
- Accept
  Motor vehicle use is allowed but not encouraged, while the road is maintained for administrative access.
- Discourage
  Motor vehicle use is discouraged by allowing alder growth at road entrance, nonremoval of blowdown, or road prism deterioration within acceptable environmental limits (depending on designated maintenance level). To discourage use, the road may also be signed as "Not Maintained for Motor Vehicle Traffic."
- Eliminate
  All motor vehicle use (including off road vehicle use) is eliminated by physically blocking the road. Where prescribed for long-term, intermittent roads, this strategy is achieved by placement of impassable barricades at road entrances. On short-term roads, removal of drainage structures effectively blocks vehicle traffic.

- Prohibit
  Motor vehicle use is prohibited by a road order (CFR closure). Implementation of this strategy on remote road systems may require the installation of gates, in addition to public notification and appropriate signing.
- Prohibit Seasonally
  Motor vehicle use is prohibited at times during the normal operating year. Seasonal prohibitions can be used to mitigate impacts of wildlife and subsistence resources. Administrative and certain permitted use of the road can continue during closure periods. Seasonal closures may be used in combination with cooperative efforts with fish and game protective agencies.

Where access is restricted, the travel management strategy would in general be to "eliminate" rather than "prohibit" road use. Access to roads under Forest Service jurisdiction can be restricted by regulation (36 CFR 212.7 and 261). In this case, applicable law confers a statutory right allowing entrance to public lands to search for minerals and to access mining claims (the Project Area has none at present). However, miners and prospectors would be required to obtain a permit to use restricted roads. Formal CFR road closures (prohibiting use) are not currently planned for any roads, but could be required in the future if use is detected.

Access into newly entered drainages would be discouraged or eliminated to minimize resource impacts, unless ongoing silvicultural work requires access to the area. In the latter case, we anticipate that non-administrative road uses would be incidental to the ongoing silvicultural activities. Roads are closed for several reasons, including fish and wildlife protection and lack of maintenance funding.

To meet access management objectives (primarily to reduce maintenance costs), all new roads built for timber harvesting would be place in storage after the completion of harvest activities, eliminating all vehicle access. Depending on the alternative selected, 3.9 (Alternative 2), 2.3 (Alternative 3), 12.3 (Alternative 4), 4.3 (Alternative 5), or 12.3 (Alternative 6) miles of newly constructed roads would be closed. In addition, 28.2 miles of road currently closed would remain closed and 22.8 miles of roads currently open would also be closed. Thus, 37.3 miles of road will remain open for public use after the completion of Luck Lake harvest activities, and the remaining existing and new roads will be closed. The Luck Roads Existing Condition map (Chapter 2) shows current access to roads in the Luck Lake Project Area. The Luck Roads Proposed Access Plan map (Chapter 2) and Table Transportation-5 show the proposed access management plan for the Luck Lake Project.

Log Transfer Facilities (LTF's)

The Forest Plan FEIS, page 3-311, identifies two potential sources for adverse effects associated with LTF's: structural embankment (placing rock in the water) and bark deposition (bark that accumulates under water).

As Tolstoi and Klawock LTF's are currently operational, only the effects from bark deposition could be associated with activities at these sites. During the transfer of logs from land to water, bark would be sloughed off and could be deposited on the ocean bottom; bark also is continually sloughed off by agitation by wind and waves while logs are in rafts. Bark accumulation on the bottom can diminish habitat for bottom-dwelling crustaceans and mollusks, as well as hamper underwater vegetation used as food and rearing sites for marine fish and other organisms. The average LTF site affects two acres of this marine benthic habitat (Forest Plan FEIS, page 3-311). The discharge of bark into the water at a LTF is a discharge requiring a National Pollution Discharge Elimination System (NPDES) permit.

Table Transportation-4
Road Management Objectives

Open (Active Maintenance)

Definition:
Road is maintained for vehicle use.

AFRPA Status:
Active

Maintenance Level:
2 or 3

Traffic Management Strategy:
Either encourage passenger vehicles or accept either passenger or high clearance vehicles.

Requirements:
- Excavate additional drainage ditches (water bars) to help provide drainage relief to all existing drainage structures.
- Clean ditches.
- Stabilize all cut and fill slopes that are susceptible to extensive soil erosion.

Does not require removal of all drainage structures, although isolated situations may require removal of an individual structure.

Rational:
Road will be used for public and/or administrative uses.

Stormproof

Definition:
Stabilizing a road segment to withstand a 25-year storm event. Stormproofing will not prohibit vehicle traffic, but will restrict traffic to vehicles with high clearance capabilities. Considered an open road with mitigation measures implemented to ensure longevity of the road, not a closed road.

AFRPA Status:
Active

Maintenance Level:
1 or 2, depending on the extent of stormproofing.

Traffic Management Strategy:
Either discourage or prohibit passenger cars, or accept or discourage high clearance vehicles.

Requirements:
- Excavate additional drainage ditches (water bars) to help provide drainage relief to all existing drainage structures.
- Clean ditches.
- Stabilize all cut and fill slopes that are susceptible to extensive soil erosion.

Does not require removal of all drainage structures, although isolated situations may require removal of an individual structure.

Rational:
No extensive use is planned for the road for up to 10 years. Road will be ``hydrologically maintenance free".

Store

Definition:
Stabilizing a road segment to withstand a 25-year storm event. Storage will prevent vehicle access into the stored section of road.

AFRPA Status:
Inactive

Maintenance Level:
1

Traffic Management Strategy:
Either eliminate or prohibit all vehicle access.

Requirements:
- Remove all water quality and fish passage streamcrossings.
- Clean ditches.
- Stabilize all cut and fill slopes that are susceptible to extensive soil erosion.
- Scarificy road to completely eliminate vehicle traffic.

Rational:
No extensive use is planned for the road for up to 50 years. Storing will eliminate any extensive maintenance requirements a road may have due to the number of fish passage and significant water quality streamcrossings, and make road "hydrologically maintenance free".

Decommission

Definition:
Closing a road segment to all vehicle traffic for an extended period of time, along with stabilizing the road segment so no additional maintenance will be required. Equivalent to "obliterate" in BMP's.

AFRPA Status:
Closed

Maintenance Level:
N/A - road is removed from FS database.

Traffic Management Strategy:
Either eliminate or prohibit all vehicle access.

Requirements:
- Make road hydraulically neutral on the landscape.
- Clean ditches.
- Stabilize all cut and fill slopes that are susceptible to soil erosion.
- Scarificy road to completely eliminate vehicle traffic.

Rational:
Our criteria for decommissioning roads included:

- infrastructure that are not needed for 50 or more years,
- short segments of road (less than 1000 feet) with high resource concerns, and
- roads located in non-development land use designations (e.g.: road currently inside an Old-growth Reserve).

While the Whale Pass, Naukati, and Winter Harbor are existing sites, the Forest Service currently plans to replace the A-frame structures at Whale Pass and Naukati, and install a land-to-barge facility at Winter Harbor. In addition to the bark deposition effects described above, the low-angle ramp planned for Whale Pass and land to barge facilities planned for Naukati and Winter Harbor would also have effects associated with structural embankment. All LTF types occupy approximately the same amount of bottom area but in different configurations. For instance, the low-angle ramp system with a 10 percent grade extends approximately 250 feet out into the water on a moderately sloped beach. This system is thus long and narrow. The land-to-barge and A-frame systems use more shoreline and do not protrude out into the water as much as the low-angle ramp system. The Forest Plan FEIS estimates that structural embankment will cover approximately one-quarter (1/4) acre per site.

While timber harvested from this project may be hauled to the Tolstoi or Klawock LTF's, or possibly the Whale Pass, Naukati, or Winter Harbor LTF's, it could also be transported to processing facilities on Prince of Wales Island, not requiring the use of LTF's. The environmental effects from this timber entry will be limited to those allowed under the existing permits and required monitoring. Which, if any, LTF is used will depend on the purchaser of individual timber sales, where they process the timber, and to whom they sell the wood.

Mitigation

Mitigation measures for forest resources applicable to road location, construction and/or design are specified on the road cards (Appendix C of the Draft EIS and Appendix 3 of the ROD for the Selected Alternative). These follow the requirements of the Forest Plan, the Best Management Practices, and other direction. Many of these are discussed under the specific resource sections of this chapter.

Table Transportation-5
Luck Lake Proposed Access Management Plan*

ROAD NUMBER	TOTAL LENGTH	LENGTH CLOSED	TRAFFIC SERVICE LEVEL	MAINTENANCE LEVEL	CLOSURE REASON	TRAVEL MANAGEMENT STRATEGY	FS TREATMENT	AFRPA STATUS
30	8.61	0.00	B	3	N/A	Encourage	Open	Active
3000305	2.28	2.28	D	1	Economics	Eliminate	Storage	Inactive
3000310	1.10	1.10	D N/A	1 N/A	Economics Fish/Soils	Eliminate Decommission	Storage to MP 1.08 Decom. MP 1.08 to end	Inactive Closed
3000320	0.95	0.95	D	1	Economics	Eliminate	Storage	Inactive
3000325	1.00	1.00	D	1	Economics	Eliminate	Storage	Inactive
3000328	2.26	1.26	C N/A	2 N/A	N/A Soils/Water	Accept Eliminate	Stormproof to MP 1.0 Decom. MP 1.0 to end	Active Closed
3000329	0.91	0.91	D	1	Soils	Eliminate	Storage	Inactive
3000330	2.68	2.68	D	1	Economics/Wildlife	Eliminate	Storage	Inactive
3000331-1	1.36	1.36	D	1	Economics	Eliminate	Storage	Inactive
3000331-2	1.79	1.79	D	1	Economics	Eliminate	Storage	Inactive
3000332	0.50	0.50	D	1	Economics	Eliminate	Storage	Inactive
3000333	0.74	0.74	D	1	Economics	Eliminate	Storage	Inactive
3000333	0.64	0.64	D	1	Economics	Eliminate	Storage	Inactive
3000334	0.21	0.21	D	1	Economics	Eliminate	Storage	Inactive
3000335	0.45	0.45	D	1	Economics	Eliminate	Storage	Inactive
3000336	2.58	2.58	D N/A	1 N/A	Economics Fish/Wildlife	Eliminate Eliminate	Storage to OGR boundary Decom. OGR boundary to end	Inactive Closed
3030	14.06	0.00	B	3	N/A	Encourage	Open	Active
3030005	1.18	1.18	D	1	Economics	Eliminate	Storage	Inactive
3030100-1	1.24	0.00	B C	3 2	N/A N/A	Accept Accept	Open to MP 1.00 Stormproof MP 1.00 to end	Active Active
3030100-2	2.06	2.06	D	1	Soils/Water/Wildlife	Eliminate	Storage	Inactive
3030105	0.24	0.00	B	3	N/A	Encourage	Open	Active
3030108	0.51	0.51	N/A	N/A	Fish/Wildlife	Eliminate	Decommission	Closed
3030110-1	3.28	3.28	D	1	Soils/Water/Wildlife	Eliminate	Storage	Inactive
3030110-2	1.64	1.64	D	1	Economics/Soils/ Water/Wildlife	Eliminate	Storage	Inactive
3030112	0.55	0.55	D	1	Soils/Water/Wildlife	Eliminate	Storage	Inactive
3030112	0.26	0.26	D	1	Economics/Soils/ Water/Wildlife	Eliminate	Storage	Inactive
3030114	0.16	0.16	D	1	Soils/Water/Wildlife	Eliminate	Storage	Inactive
3030115	0.95	0.95	D	1	Economics/Geology/ Soils	Eliminate	Storage	Inactive
3030116	0.35	0.35	D	1	Economics/Water	Eliminate	Storage	Inactive
3030117	0.72	0.72	D	1	Economics/Geology	Eliminate	Storage	Inactive
3030118	1.10	1.10	D	1	Soils/Water/Wildlife	Eliminate	Storage	Inactive
3030120	1.86	1.86	D	1	Soils/Water/Wildlife	Eliminate	Storage	Inactive
3030122	0.31	0.31	D	1	Soils/Water/Wildlife	Eliminate	Storage	Inactive
3030200-1	0.76	0.00	C	2	N/A	Accept	Stormproof	Active

* underlining indicates new construction

Table Transportation-5
Luck Lake Proposed Access Management Plan (cont.)*

ROAD NUMBER	TOTAL LENGTH	LENGTH CLOSED	TRAFFIC SERVICE LEVEL	MAINTENANCE LEVEL	CLOSURE REASON	TRAVEL MANAGEMENT STRATEGY	FS TREATMENT	AFRPA STATUS
3030200-2	2.28	0.71	C	2	N/A	Accept	Stormproof to MP 2.33	Active
			D	1	Wildlife	Eliminate	Storage MP 2.33 to end	Inactive
3030202	0.93	0.93	D	1	Economics	Eliminate	Storage	Inactive
3030210	0.72	0.72	D	1	Economics/Wildlife/ Soils	Eliminate	Storage	Inactive
3030220	0.53	0.53	D	1	Economics/Wildlife	Eliminate	Storage	Inactive
3030270	0.58	0.58	N/A	N/A	Wildlife	Eliminate	Decommission	Closed
3030300	4.23	0.16	C	2	N/A	Accept	Stormproof to MP 4.07	Active
			N/A	N/A	Wildlife	Eliminate	Decom. MP 4.07 to end	Closed
3030320	0.59	0.59	D	1	Water	Eliminate	Storage	Inactive
3030350	0.64	0.64	D	1	Wildlife	Eliminate	Storage	Inactive
3030350	0.58	0.58	D	1	Economics/Wildlife	Eliminate	Storage	Inactive
3030351	0.43	0.43	N/A	N/A	Water/Wildlife	Eliminate	Decommission	Closed
3030354	0.61	0.61	D	1	Economics/Wildlife	Eliminate	Storage	Inactive
3030356	0.61	0.61	D	1	Economics/Wildlife	Eliminate	Storage	Inactive
3030360	1.23	1.23	D	1	Economics/Wildlife	Eliminate	Storage	Inactive
3030362	0.23	0.23	D	1	Economics/Wildlife	Eliminate	Storage	Inactive
3030400	3.10	0.94	C	2	N/A	Accept	Stormproof to jnct.w/ 435	Active
			D	1	Wildlife	Eliminate	Storage from jnct. 435 to end	Inactive
3030420	2.93	1.68	C	2	N/A	Accept	Stormproof to MP 1.25	Active
			D	1	Economics	Eliminate	Storage MP 1.25 to end	Inactive
3030421	0.27	0.00	C	2	N/A	Accept	Stormproof	Active
3030423	0.34	0.00	C	2	N/A	Accept	Stormproof	Active
3030425	0.39	0.00	D	1	Economics/Wildlife	Eliminate	Storage	Inactive
3030430	0.61	0.61	D	1	Economics	Eliminate	Storage	Inactive
3030431	0.31	0.31	D	1	Economics	Eliminate	Storage	Inactive
3030435	0.68	0.68	D	1	Water/Wildlife	Eliminate	Storage	Inactive
3030435	0.51	0.51	N/A	N/A	Water/Wildlife	Eliminate	Decommission	Closed
3030440	0.43	0.43	D	1	Wildlife	Eliminate	Storage	Inactive
3030600-1	2.08	0.00	C	2	N/A	Accept	Stormproof	Active
3030600-2	1.07	0.00	C	2	N/A	Accept	Stormproof	Active
3030630	2.61	2.61	D	1	Economics	Eliminate	Storage	Inactive
3030640	0.80	0.00	C	2	N/A	Accept	Stormproof	Active
3030641	0.32	0.32	D	1	Economics	Eliminate	Storage	Inactive
3030650	0.36	0.36	D	1	Economics/Water	Eliminate	Storage	Inactive
3030700-1	1.54	0.00	C	2	N/A	Accept	Stormproof	Active
3030700-2	1.31	0.00	C	2	N/A	Accept	Stormproof	Active
3030720	1.72	1.72	D	1	Soils/Fish	Eliminate	Storage	Inactive
3030720	1.61	1.61	D	1	Economics/Soils/ Fish	Eliminate	Storage	Inactive

* underlining indicates new construction

Water

The following discussions and analysis are based on and summarized from the Soil, Floodplain, Riparian, and Wetland Resources Report for the Luck Lake Project (1998) and Addendum (1999), and the Watershed Analysis for the Luck Lake Project Area (1998) and Addendum (2000). These reports include more detailed analyses and references to the scientific literature. A Forest-wide treatment of water resources may be found in the Forest Plan FEIS, Chapter 3. Applicable water quality direction is included in the Forest Plan, Chapter 4 ("Riparian" and "Soil and Water") and Appendices C, D and J. The unit and road cards (Appendices B and C of the Draft EIS and in Appendices 2 and 3 of the ROD for the Selected Alternative) contain additional site-specific implementation requirements.

The water-related resources of the Luck Lake Project Area include floodplains, riparian areas (including streams, lakes and ponds), and wetlands. The effects of past timber harvest activities on the Luck Lake drainage is a project issue. Floodplains and associated alluvial fans are not proposed for timber harvest or road construction under any of the alternatives. Although past management activities occurred in these areas, current Forest Plan standards and guidelines prohibit timber harvest in active portions of either. It is also unlikely that future timber harvesting or roading would be proposed in floodplains or alluvial fans. Additional analysis relative to riparian areas may be found in the Fisheries section of this chapter.

Affected Environment

Riparian Areas

Riparian areas are areas adjacent to streams, lakes, and ponds that are either influenced by groundwater from the water body, or are sites where ground disturbing activities can have a direct influence on the water quality of the water body. Riparian areas can include both upland and wetland areas adjacent to water bodies or streams. Riparian areas include floodplains and alluvial fans (discussed above), and areas below the slope-break on V-notch or gorge channels. Riparian area delineations can equate to stream buffers for a particular stream, but typically the stream buffer will be larger than the riparian area. In a few instances stream buffers may be smaller than the riparian area.

Stream process groups are groups of streams that share similar formative processes and stream channel characteristics. Process groups reflect the long-term interaction of geology, landform, climate, and riparian vegetation. The Riparian standards and guidelines in the Forest Plan are specific to stream process groups. Outside floodplains and alluvial fans, the majority of timber harvest within riparian areas of the Project Area has occurred in the high gradient contained process group (32 miles) and the moderate gradient/mixed control process group (6.3 miles). Almost 50 miles of streams in the Luck Lake Project Area have had past timber harvesting within their riparian areas, a total of 2,248 acres of harvest out of 6,857 acres of riparian area.

Wetlands

Wetlands are defined as "those areas that are inundated or saturated by surface or groundwater with a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions" (40 CFR 230.41 (a)(1)). "Frequency and duration" of a groundwater table sufficient to support a prevalence of hydrophytic plants can include areas where the groundwater table is 12 inches below the soil surface for as little as two weeks during the growing season. In the Luck Lake Project Area, many wetlands are not associated with streams or lakes and include no surface water areas, while others are intimately associated with lakes or ponds. Some wetlands are dependent on ponds and lakes for recharge water, while some are not.

Approximately 70 percent of the Luck Lake Project Area, 24,880 acres, are mapped as wetlands. Map interpretations include somewhat poorly drained soils on relatively steep slopes that do not always meet the hydrology criteria for classification as wetlands. Field reconnaissance indicates that this mapping probably overestimates the actual amount of forested wetlands on steeper slopes. Project Area-wide, the most common wetland types are forested wetlands (8,577 acres), a forested wetland/non-wetland complex (4,814 acres), a forested wetland/short sedge complex (4,763 acres), and alpine shrub/short sedge (4,046 acres). Past timber harvest has occurred on 5,063 acres of wetlands in the Project Area, and there are currently 53 miles of roads across wetlands.

Forested wetlands on organic soils are very low-volume, low-productivity sites, but can support lower volume commercial timber. While forest regeneration is initially rapid on these sites, growth slows dramatically as the root systems of the young trees expand into saturated soils. Approximately 5,349 acres of forested, poorly-drained organic soils occur in the Project Area, and approximately 1,299 acres have been harvested.

Wetland value (socioeconomic benefit) is largely dependent on the human use or perceived benefit to be derived from wetland functions (hydrologic, bio-chemical, and biologic functions such as erosion control and sediment storage, element recycling and maintenance of water chemistry, and providing terrestrial and aquatic habitats). Three wetland habitat types in the Luck Lake Project Area possessing high wetland value are estuaries, tall sedge fens, and sphagnum bogs. All three types are locally scarce, totaling just 641 acres in the Project Area.

Estuaries are regionally highly important for their fisheries, wildlife and marine habitat values. Forest Plan standards and guidelines (Beach Fringe and Estuary) exclude commercial timber harvest within 1,000 feet of estuaries. Tall sedge fens filter large amounts of groundwater and are usually found on footslopes or adjacent to floodplains. Tall sedge fens are part of the floodplain process group and excluded from timber harvest by the Forest Plan standards and guidelines for riparian areas. Sphagnum bogs are very poorly drained organic soils derived from a relatively undecomposed accumulation of sphagnum moss. Approximately 1/3-mile of road has been constructed across sphagnum bogs in the Project Area. Sphagnum bogs are not included in the suitable timber base, and no future road construction is planned in these areas.

Watershed Analysis

The Watershed Analysis for the Luck Lake Project Area analyzed 18 watersheds within the Luck Lake Project Area. Due to respective size, management histories, public comments, and sediment risk indices, three watersheds were discussed in detail: Coffman Creek (B58A), Chum Creek (B18A), and Luck Lake (C62C2, C26C3, and C27B). The following information is summarized from this watershed analysis, which is part of the Luck Lake planning record.

Coffman Creek

The Coffman Creek watershed is 3,216 acres in size and includes 2,578 acres of commercial forest land (CFL). The upper part of the watershed is a U-shaped glacial valley. The lower part consists of low elevation, broad ridges and benches with very gentle slopes. 1,082 acres, or 42% of the CFL has been harvested in the Coffman Creek watershed. Most of the harvest (80%) has taken place in the last 30 years and is located away from fish habitat. Prior to 1963, approximately 226 acres were harvested and tractor-logged to the saltwater near the mouth of the watershed. This area is currently within State land boundaries. The fluvial habitat in this area appears to be in a degraded condition, with a shallow, meandering channel and limited spawning habitat. Beaver are active in this area. Approximately 2.0 of the 5.2 miles of anadromous streams in this watershed have been subject to streambank harvest. The riparian area is largely intact in the upper 75 percent of the watershed.

The landslide inventory identified three small landslides (totalling less than one acre) in this watershed that directly affected water quality. All three were related to timber harvest.

Chum Creek

The Chum Creek watershed is 1,660 acres in size and includes 1,155 acres of CFL. Slopes are moderate throughout the watershed and tributary streamcourses are generally deeply incised in small, till-filled valleys. 724 acres, or 63% of the CFL has been harvested in the Chum Creek watershed. A high percentage of the floodplain timber was harvested between 1964 and 1967, resulting in streambank harvest of approximately 1.0 miles of the 1.2 miles of anadromous streams in this watershed. Timber adjacent to the lowest 1/4 mile of Chum Creek has not been harvested.

FDR 3030000 crosses both the East Fork and the West Fork of Chum Creek with culverts. The road is located at the edge of the floodplain and on State land for first mile of the stream. Coffman Cove uses the East Fork of Chum Creek as the city's water source. The community's water intake is just upstream of the floodplain reach.

Luck Lake Drainage

The Luck Lake drainage is comprised of three distinct sub watersheds: the East and West Forks of Luck Creek, and Eagle Creek/Luck Lake. The total size of the drainage is 19,300 acres and includes 12,905 acres of CFL. It lies entirely within the Baird Peak geomorphic zone and consists of a glacially scoured U-shaped valley. Luck Lake is 531 acres in size and at the center of this drainage. The watershed analysis identified a high-density fish habitat area at the head of Luck Lake. Upstream of this area, on the southwest fork of Luck Creek, is a high sediment risk area.

6,026 acres, or 47% of the CFL have been harvested in this drainage. Timber stands near the high-density fish habitat area were harvested in 1969. Approximately 11.8 miles of the 27.6 miles of anadromous streams have been subject to streambank harvest. Aerial photos indicate that harvest activities have simplified the drainage network on the two lower Luck Creek alluvial fans and caused changes in fish habitat. Channel condition assessment transects established on two Luck Creek sites indicate a coarsening of substrate over similar streams in unmanaged condition.

12,193 acres within the Luck Lake drainage are classified as wetlands, including a high percentage of the high-value wetlands (tall sedge fens and bogs) found within the Project Area. Past timber harvest activities have resulted in the following:

- The Luck Lake drainage has 34.1 miles of streams with past harvest in riparian areas; 21.3 are in the high gradient contained process group.
- The area contains 954 acres of floodplains, 686 of which (72 percent) have been harvested; these floodplains have 5.9 miles of roads.
- Timber harvest has occurred on 2,534 of the 12,193 acres of wetlands (21 percent); within these wetlands there are 28.4 miles of roads.

Environmental Consequences

Riparian Areas

Timber harvest and road construction activities can adversely impact riparian areas by destabilizing streambanks through vegetation removal, disturbing soils and causing erosion, and eliminating a source of large woody debris, thus reducing channel integrity. Timber harvest adjacent to riparian areas can also accelerate windthrow. Proposed harvest activities of the Luck Lake Project are located predominantly at higher elevations away from fisheries resources, and most commonly adjacent to high gradient contained streams.

The Forest Plan standards and guidelines for riparian areas generally exclude timber harvest from the riparian areas along all Class I, II and III streams (all fish streams and non-fish streams with immediate influence on fish streams). Class IV streams (mainly ephemeral or intermittent channels) may be considered for timber harvest. Class IV streams within the Project Area occur in units receiving partial cut harvest prescriptions. Specific riparian area protection measures and application of Best Management Practices (BMP's) are documented on the road and unit cards (Appendices B and C of the Draft EIS and Appendices 2 and 3 of the ROD for the Selected Alternative), and in the soil and fisheries resource reconnaissance reports, contained in the project planning record.

The potential for windthrow of trees left within harvest units and riparian areas is addressed in the silvicultural prescriptions on unit cards. All units receive partial cut harvest, and it is anticipated that the residual trees left within harvest units will improve the windfirmness of trees left within riparian areas. Approximately 3,900 feet of riparian areas on high gradient contained streams lie within high wind disturbance probability areas (Krosse 1998); silvicultural prescriptions for these units emphasize leaving windfirm trees. Measures to reduce the risk of windthrow are not perfect. Based on previous field experience and observations, we estimate that, following timber harvest associated with this project, up to 15 percent of the trees left in buffers on high gradient contained streams will incur some windthrow. The Soil, Floodplain, Riparian, and Wetland Resources Report (1998) and Addendum (1999) include additional information.

Wetlands

The high density of wetlands in the Luck Lake Project Area makes complete avoidance of wetlands impossible while implementing any of the action alternatives. During unit design, all high-value wetlands (estuaries, tall sedge fens, and sphagnum bogs) were completely avoided.

Many of the remaining forested wetlands on organic soils do not support commercial or economic stands of timber. During Luck Lake Project reconnaissance, proposed timber harvest on poorly drained organic soils was investigated on a case-by-case basis. Large areas of poorly drained organic soils were removed from proposed timber harvest units. Small areas of poorly drained organic soils were considered on a case-by-case basis, and

removed from harvest units where appropriate. Of the remaining forested wetlands, up to 614 acres are considered for timber harvest in the alternatives. Table Water-1 displays the amounts actually proposed for harvest in the action alternatives. Harvesting timber from forested wetlands temporarily changes the hydrology of the site. Patric (1966) suggests an increase in water yield as a result of timber harvest. A temporary increase in soil moisture is expected until equivalent transpiration and interception surfaces are reestablished. The partial cut harvest proposed for all units will keep some of the evapotranspiration surfaces intact. Tree growth on forested wetland sites is expected to be slower than on adjacent upland sites.

Table Water-1
Proposed Timber Harvest and Road Construction in Wetlands by Alternative

Alternative	Timber Harvest (acres)	Road Construction (miles) Temporary	Road Construction (miles) Specified	Road Construction (acres) Temporary	Road Construction (acres) Specified
2	316	0.8	3.2	4	15
3	487	0.6	1.9	3	9
4	614	1.2	9.1	6	44
5	270	0.7	3.7	3	18
6	614	1.2	9.1	6	44

Source: GIS Database

The frequency of wetlands within the Project Area also makes total avoidance of road construction in wetlands difficult or impossible. Table Water-1 displays the miles and acreages of wetland road construction by alternative. Roads through wetlands can affect the flow and reach of water in the wetland. The degree of impact depends largely on the wetland type and the road construction materials and methods. Placement of culverts and the use of coarse rock roads helps to maintain the flow and reach of water. Road location has avoided all high-value wetlands. For other wetlands, functional assessments were made on a case-by-case basis and the road located to minimize any adverse effects. The major factors considered in the functional assessments were water quality, fish or wildlife habitat, economic trade-offs, and locally scarce or unique features of the wetlands.

The road cards (in Appendix C of the Draft EIS and in Appendix 3 of the ROD for the Selected Alternative) discuss specific wetland avoidance, minimization, and mitigation measures, as well as the wetland functions considered in the road location. Road access restrictions will eliminate vehicular access on new roads through wetlands. The new road construction proposed under the alternatives meets the silvicultural exemption requirements of the Corps of Engineers 404 (b) (1) permitting process.

Watershed Analysis

Alternatives 3, 4, and 6 propose harvest within the Coffman Creek watershed. Alternative 3 proposes 75 acres of harvest and no new road construction. Alternatives 4 and 6 propose 93 acres of harvest and 0.7 miles of new road construction. Unit 572-411 (Alternatives 4 and 6) is on slopes less than 50 percent gradient and borders fish rearing and spawning habitat. Unit 572-425 (all three alternatives) is at higher elevations and has some windthrow concerns. Appropriate buffers, including assurance of windfirmness, are prescribed as required along the streams within these units.

All of the action alternatives proposed timber harvest within the Chum Creek watershed. Alternatives 4 and 6 propose the most (42 acres); Alternative 5 proposes the least (27 acres). In all instances, the proposed harvest is on ridgetops in isolated stands of timber surrounded by muskeg. Each action alternative proposes building new roads in this watershed, from 0.5 miles in Alternatives 3 and 5 to 1.3 miles in Alternatives 4 and 6.

Luck Lake Drainage

The watershed analysis concluded that additional timber harvest and road construction was acceptable as long as the high-risk sediment source area was avoided. No alternatives propose timber harvest or road construction in this area. All of the action alternatives propose harvest within the Luck Lake drainage. Alternatives 4 and 6 propose the most (617 acres) while Alternative 5 proposes the least (263 acres). Alternatives 2 and 3 propose 359 acres and 596 acres of harvest, respectively. The floodplains of the Luck Lake drainage will not be affected, and riparian areas will be excluded from timber harvest under Forest Plan standards and guidelines. The Luck Lake drainage has the majority of the Project Area's high gradient contained streams, and blowdown could occur in about 15 percent of the riparian areas of these streams adjacent to harvest units (see previous discussion of riparian area effects). All action alternatives propose timber harvest and road construction on forested wetlands in the Luck Lake drainage. See Table Water-2. Alternatives 5 and 2 have the fewest acres of wetland harvest; Alternatives 3 and 2 the least road construction.

Table Water-2
Proposed Timber Harvest and Road Construction on Wetlands within the Luck Lake Drainage

Alternative	Timber Harvest (acres)	Road Construction (miles) Temporary	Road Construction (miles) Specified	Road Construction (acres) Temporary	Road Construction (acres) Specified
2	226	0.4	0.5	2	2
3	344	0.3	0.0	1	0
4	364	0.5	2.9	2	14
5	157	0.4	0.8	2	4
6	364	0.5	2.9	2	14

Source: GIS Database

Cumulative Effects

Riparian Areas

Past timber harvest activities have included harvest below the slope-break on high-gradient contained streams. This harvest has resulted in soil disturbance on the steep sides of V-notches, a lack of large woody debris in the streams, and an increase in sediment reaching downstream resources. These effects have occurred primarily in the Chum Creek and Luck Lake watersheds. More recent timber harvest has left standing timber below the slope-break. Most of these slope-break buffers remain standing, but at least one in the southwest fork of Luck Creek watershed has mostly blown down, disturbing soils on the side of the V-notch and causing many trees to bridge the notch.

Timber harvest proposed under the five action alternatives will leave trees standing below the slope-break on streams within V-notches. To reduce the chance of windthrow, a variety of silvicultural prescriptions are used for stands adjacent to V-notches to better achieve windfirmness of the remaining trees. Partial cut prescriptions will provide additional windfirmness. However, some windthrow is still likely within some of the riparian areas associated with the high-gradient contained streams. This windthrow could introduce sediment into the stream system. For estimating cumulative effects, it is assumed that all remaining suitable forest lands will be harvested by 2154, and that during that time our understanding of how to provide reasonable assurance of windfirmness will improve. As a result, we anticipate that blow down will occur in about five percent of riparian forests adjacent to high gradient contained streams in the future (as opposed to the 15 percent currently expected), or along about 1.5 miles of streams.

Wetlands

To estimate cumulative effects of timber harvest and associated roads on wetlands, the same assumption of harvest by 2154 is used. The effects of timber harvest on the beneficial functions of forested wetlands are in most cases expected to be temporary, especially with the use of partial cut timber harvest. The amount of road needed to access the remaining tentatively suitable forest land is estimated by extrapolating from the roads required for Alternatives 4 and 6, which have the highest proposed harvest. Currently there are about 53 miles of roads across wetlands, and the Luck Lake Project could bring that total up to 63 miles (under Alternatives 4 and 6). Harvesting the remaining suitable lands would require another 30 miles of roads in wetlands, for a cumulative total of about 93 miles - one mile of road for every 265 acres of wetlands or 1.8 percent of wetlands covered by roads. The effects of road construction on wetland resources are discussed above. The cumulative effect of converting a portion of the wetlands within a watershed to roads is largely unknown. To fill this information gap, the Forest Service is in the process of developing protocols to determine the effects of road construction on wetlands, as required by the Tongass Land Management Monitoring Plan. At this time the information gap is considered acceptable based on past experience and the information provided by Swanston and others (pers. comm. 1997).

Watershed Analysis

Assuming that all suitable forest lands will be harvested by 2154, and roads have been built to access harvest units, the Coffman Creek and Chum Creek watersheds could have riparian area blowdown on approximately 0.07 miles and 0.03 miles of high gradient contained streams, respectively. Coffman Creek watershed would have approximately 18.9 miles of roads across wetlands; Chum Creek watershed would have approximately 9.1 miles. Overall, approximately 5.2 percent of Coffman Creek watershed and 6.7 percent of Chum Creek watershed would be in a disturbed condition by 2154. These percentages are well within the Regional Soil Quality standards, which allow 15 percent of an activity area to be in a disturbed condition.

The lower fluvial portions of both the Coffman Creek and Chum Creek watersheds lie on State land. Both fluvial areas are in a degraded condition from past management activities. The Watershed Analysis identified rehabilitation opportunities associated with FDR 3030000 and riparian thinning. The Federal Highways Program is currently considering upgrading this road. If the Sweetwater route is chosen for this upgrade, the resulting change in road and stream crossing locations could improve fish habitat.

Current and future sediment production on the Luck Lake Project Area can be primarily traced to the road system. The access management plan proposed in this EIS (see Chapter 3, Transportation) has recommended putting a number of roads into storage. Overall, we expect this action to reduce the amount of fine sediment generated over the long term, even with the harvest of the remaining suitable and available lands, and new roads needed for harvest.

Luck Lake Drainage

Using the same assumption of harvest and road construction listed above, by 2154 the Luck Lake drainage could have riparian area blowdown on about 1.1 miles of high gradient contained streams, and would have a total of 41 miles of roads across wetlands - one mile of road for every 300 acres of wetlands. If all suitable lands are harvested by 2154, about 4.6 percent of the watershed will be in a disturbed condition (roads, rock pits, landslides, and blowdown).

Based on the channel condition assessment data, the effect of changes in streamflow over time on fish habitat have already occurred. The factors affecting streamflow may have been attenuated somewhat by thinning the second growth and the recovery of vegetation in the riparian areas. The harvest of the remaining tentatively suitable lands is not expected to change streamflow beyond the changes that occurred following the 1969 harvest. With current Forest Plan standards, it is likely that fish habitat and riparian condition will continue to improve.

Mitigation

Water-related (including riparian areas and wetlands) resource protection prescriptions and applicable BMP's are listed on unit and road cards, and in the fisheries and soil resources reconnaissance reports (all contained in the project planning record). The Beach and Estuary Fringe, Riparian, Soil and Water, and Wetlands standards and guidelines of the Forest Plan all apply. The Region 10 Soil and Water Conservation Handbook includes all BMP's applicable in Alaska and provides additional direction for project implementation. Buffer effectiveness stability monitoring is included in the Forest-wide monitoring plan.

Wildlife

The following discussions and analyses are based on field reviews, maps, queries, the Biological Assessment and Evaluation for the Project Area (see Threatened, Endangered and Sensitive Species), and other documentation available in the planning record. A related wildlife analysis is contained in the Forest Plan FEIS, Chapter 3 and Appendix N. Applicable wildlife direction is included in the Forest Plan, Chapters 3 (Land Use Designations) and 4 (Forest-wide Standards and Guidelines), Appendix K, and the 1999 Record of Decision. The unit and road cards (Appendices B and C of the Draft EIS, and Appendices 2 and 3 of the ROD for the Selected Alternative) for the Luck Lake Project contain additional site-specific implementation requirements.

Affected Environment

The Luck Lake Project Area is a mosaic of old-growth stands, young-growth stands, muskegs, and recent clearcuts all containing variable timber densities. Timber harvest began in the 1950's, and there has been little or no retention of overstory structure within the almost 10,000 acres harvested to date. Extensive harvest below 1,200-ft. elevation occurred in Eagle Creek, Luck Creek, and Coffman Creek watersheds in the 1970's. More than 33 percent of each watershed has been harvested (42% - Coffman Creek, 63% - Chum Creek, and 47% - Luck Creek). These productive, young stands are in the stem exclusion stage of forest regeneration, which will last approximately 80 years (Alaback 1982). They are densely stocked, uniform in size, and exhibit a poorly developed understory and an even-aged overstory that provides low diversity and low habitat value for wildlife. Past harvest in the Project Area has decreased deer winter range and can potentially impede the elevational migration of deer.

Three "small" old-growth habitat reserves (Old-growth Habitat Land Use Designation) are located in the Project Area, one in each VCU. The location and landscape function of these reserves was evaluated during several interagency and interdisciplinary meetings during 1997 and 1998. Changes to two of the small old-growth habitat reserves are proposed to include more low-elevation wildlife habitat than was in the original designations. As discussed below, lower-elevation old-growth forest is particularly important as deer winter habitat. Specifics on the small reserves are discussed in the Biodiversity and Old Growth section of this chapter.

Management Indicator Species (MIS)

Management Indicator Species (MIS) are species of vertebrates and invertebrates whose population changes are believed to best indicate the effects of land management activities (USDA Forest Service 1982). MIS are used to assess maintenance of population viability (the ability of a population to sustain itself naturally), biological diversity, and management of game (Forest Plan FEIS).

The following have been selected as MIS for this project and will be discussed in this chapter:

Species	Basis for Selection
Sitka black-tailed deer	Important subsistence, game species
marten	Important furbearer; old-growth associate
hairy woodpecker	Cavity excavator
brown creeper	High-volume stands; Large, old-growth trees
Vancouver Canada goose	Wetland habitat; game species
Alexander Archipelago wolf	Important furbearer
Prince of Wales flying squirrel	Endemic taxon; old-growth associate

Sitka Black-tailed Deer

The Sitka black-tailed deer was chosen as an MIS because it is an important game and subsistence species and is seasonally associated with old-growth forests. Research conducted in Southeast Alaska indicates that high-volume, mature forests at lower elevations are needed to sustain deer populations during severe winters (Schoen et al. 1985; Hanley and Rose 1987; Yeo and Peek 1992). Large, strong branches of mature stands intercept snow and maintain available forage. Productive, higher volume stands of old-growth forests support the largest biomass of herb and shrub forage (Alaback 1982). Deer populations are impacted by the combination of deep-snow winters and large amounts of winter range converted to second growth. Snow reduces or eliminates forage availability in young clearcuts. Closed canopy young-growth stands provide little forage in all seasons.

The Project Area has been divided into high-, medium-, and low-value deer winter range following the Forest Plan (Forest Plan FEIS, page 3-19). Low elevation (<800 ft.) habitat (the high-value habitat) has been significantly reduced within the Project Area (Table Wildlife-1). Maintaining low elevation habitat was the main reason for the changes to small old-growth habitat reserves.

Table Wildlife-1
Existing Harvest by Elevation Class

Elevation Class	Acres Harvested	Acres Remaining (1999)*
0-800	7,834	7,435
800-1,200	1,603	2,774
1,200-1,500	398	2,186
>1,500	103	2,145

*Unharvested productive old growth (suitable and available, and unsuitable commercial forest land)
Source: GIS Database

An interagency model (Suring et al. 1992) was developed to evaluate the potential quality of winter habitat for Sitka black-tailed deer. The model was revised to include the following: 1) 100 deer/square mile was used for the density of deer when the HSI value = 1 (Person et al. 1997 and Suring et al. 1993); 2) the forest suitability layer has been updated to reflect field-verified suitability. Model outputs are expressed as numbers of deer a habitat is theoretically capable of supporting; they do not represent individuals actually present. Those values can be converted to estimated number of deer per square mile by dividing the number of deer by 55.5 square miles (total number square miles in the Project Area).

Deer habitat capability values presented below and in Table Wildlife-3 do not reflect the assumed total loss of habitat capability on state and private lands within the Project Area (Forest Plan FEIS, page 3-368). Moreover, The deer habitat capability model was developed using habitat parameters from the northern Tongass National Forest where the winters are more severe than Prince of Wales Island, and the canopy cover equated to tree volume stratas may not be comparable. The combination of these two factors may result in an underestimate of deer habitat capability on Prince of Wales Island. The intent of the model, however, is to compare relative densities across project alternatives, therefore it satisfies the analysis objectives for this project.

Prior to large-scale timber harvesting in 1954, the Luck Lake Project Area had an estimated habitat capability of 1,659 deer. At the present time (1999) the estimated habitat capability is 990 deer. Habitat capability for deer has undergone a 40 percent reduction from the pre-timber harvest capability. The Luck Lake Project Area generally corresponds to Wildlife Analysis Area (WAA) 1420. Deer habitat capability was estimated by WAA in the Forest Plan FEIS (page 3-371). Comparison of deer habitat capability by WAA's occurring with the Tongass National Forest suggest that WAA 1420 has undergone the greatest decline in deer habitat capability since 1954 (55 percent).

Marten

The marten was selected as an MIS because of its association to old growth and because it is an important furbearer. According to reports from Alaska Department of Fish and Game, marten have been abundant within Game Management Unit 2 (GMU 2). The Forest Plan identifies high-value marten habitat as high-volume, old-growth forest below 1,500 ft. elevation. The majority of past timber harvest in the Project Area likely took place in high-volume stands, however the actual amount of harvest in these stands is not known. The Project Area currently contains 5,588 acres of old-growth forest that meet the criteria for high-value marten habitat.

Martens are easily trapped and can be over-harvested, especially where trapping pressure is heavy and not effectively controlled. This corresponds closely to the availability of road access (Suring et al. 1992b). Marten densities decrease (due to their susceptibility to over-trapping) when road densities exceed 0.2 miles of road per square mile, and marten decrease by as much as 90 percent when road densities approach 0.6 miles of road per square mile. Open road density in the Project Area is currently 1.1 miles of road per square mile.

Hairy Woodpecker

The hairy woodpecker was chosen as an MIS because of its preference for stands of older western hemlock and Sitka spruce, and for its association with snags (standing dead trees). Hairy woodpeckers are resident birds in Southeast Alaska. They are primary cavity excavators, and use snags and partially dead trees for nesting and foraging. Forty-two species of mammals and birds in Southeast Alaska nest or den in tree cavities, including woodpeckers, owls, hawks, waterfowl, bats, squirrels, martens, and otters. Several of these species depend exclusively on cavities in the large diameter snags characteristic of old-

growth stands. Hairy woodpeckers can represent most cavity nesting or denning species, as they would respond similarly to proposed activities.

Hairy woodpecker habitat is defined as high-volume stands occurring below subalpine. Availability of suitable winter habitat for roosting and foraging is considered an important constraint on the habitat suitability of the hairy woodpecker.

Brown Creeper

The brown creeper was chosen as an MIS because of it is associated with large, old trees. Large diameter trees are preferred because a bird can feed longer on a large tree and capture more prey per visit. Stands with volumes of 20-30 MBF per acre contained approximately one tenth the number of brown creepers observed in stands with volumes greater than 30 MBF per acre (Hughes 1985). Other habitats in Southeast Alaska are not considered suitable for brown creepers.

Vancouver Canada Goose

The Vancouver Canada goose was selected as an MIS to represent old-growth and riparian habitats. The Vancouver Canada goose is also a game species. Vancouver Canada geese are primarily non-migratory (Ratti and Timm 1979) and are found almost exclusively in Southeast Alaska. Unlike other subspecies of Canada geese, Vancouvers use forested habitats for nesting, brood rearing, and molting; they use trees for nest sites and perches during incubation, and rely primarily on forest understory plant species for food (Doyle et al. 1988).

Gray (Alexander Archipelago) Wolf

The Alexander Archipelago wolf is a subspecies of the gray wolf. It was selected as an MIS because it is an important furbearer. The Alexander Archipelago wolf has been the subject of Endangered Species Act deliberations for several years. In 1997, after a petition for listing, a "non-warranted" decision, an appeal, and a court-ordered reevaluation, the U.S. Fish and Wildlife Service made a second determination that the species in Southeast Alaska did not warrant listing.

The primary food of most Southeast Alaskan wolves is deer, although they feed on beaver and spawning salmon when available (Wood 1990, Person 1993). Deer habitat capability is believed to be the single most important factor affecting wolves. Estimated deer habitat capability of the Project Area is currently 17.8 deer per square mile.

Another important consideration for wolf conservation is the amount of mortality resulting from trapping and hunting. Levels of wolf harvest on north Prince of Wales Island are of particular concern where the numbers killed have exceeded 50 percent of the population. Many studies have shown that wolf abundance may be inversely correlated with road density (Theil 1985, Jensen et al. 1986, Mech et al. 1988, Fuller 1989, Person et al. 1996). Person et al. (1996) noted that wolf harvest rates increased sharply in WAA's on Prince of Wales Island where road density exceeded 0.49 miles per square mile. In areas where interagency analysis has determined that road access significantly contributes to wolf mortality and wolf population data suggests that wolf mortality exceeds sustainable levels, the Forest Plan and 1999 Record of Decision recommend maintaining open road densities at or below a threshold of 0.7 mile/square mile to help protect wolf populations from over-harvest . High road densities allow human access for shooting or trapping wolves, and management of roads is an important component of a wolf conservation strategy (Van Ballenberghe et al. 1975, Mech and Karns 1977). Open road density in the Project Area is currently 1.1 mile per square mile.

Prince of Wales Flying Squirrel

The Prince of Wales flying squirrel is associated with old-growth forest and may be genetically distinguished from all other flying squirrel populations. Landscape connectivity is an important factor for flying squirrel viability because this species exhibits limited mobility. The Prince of Wales flying squirrel was part of a group of endemic mammals evaluated for potential risks to viability in the Forest Plan FEIS. Among the endemics, it was rated highest as being at risk of not having viable populations maintained over time, largely due to its dependence on unfragmented old-growth forest (Forest Plan, pp. 3-410 to 3-415).

Environmental Consequences

Effects on Wildlife Habitat

The amount of timber harvest among the action alternatives ranges from 426 acres (Alternative 5) to 1,038 acres (Alternatives 4 and 6). This is three to seven percent of the remaining productive old-growth forest in the Project Area (see Table Wildlife-1). All harvest units in VCU's 572 and 581 are designed to retain approximately 30 percent canopy closure consistent with the goshawk standards and guidelines (discussed in the Threatened, Endangered and Sensitive Species section of this chapter). These VCU's have had more than 33 percent of their productive old growth harvested and thus pose a higher risk of not providing habitat to sustain viable populations of goshawks. Standards and guidelines for marten have similar harvest objectives. Harvest objectives for goshawk and marten (Forest Plan, pp. 4-90 to 4-91 and pp. 4-118 to 4-119) include the following:

- An average of 30 percent canopy closure throughout the timber harvest unit.
- An average of at least 8 large trees/acre.
- An average of at least 3 large decadent trees/acre.
- An average of at least 3 large down trees/acre.
- Remaining trees should be uniformly distributed throughout the stand, but trees may be clumped for operational concerns or ecological opportunities.
- Retained trees should have a reasonable assurance of windfirmness.

Compared to traditional clearcut harvest, these partial harvest requirements will mitigate some effects to old-growth associated species in that some forest canopy is provided along with large living and decadent (snag) trees. They will not mitigate effects to species preferring a more closed, unfragmented habitat. Alternatives 4 and 6 include five harvest units in VCU 582, which are under less restrictive marten requirements. These units would maintain at least 10 percent existing stand structure, and would retain fewer features benefiting wildlife.

Although each action alternative includes timber harvest of forested wildlife habitat, some key habitats are protected by Forest Plan standards and guidelines. These include most riparian management areas (the exception being along Class IV streams), and all beach fringe and estuary fringe habitats. Each VCU contains one small old-growth habitat reserve, setting aside productive old-growth forest, much of which occurs at lower elevations (see Biodiversity and Old Growth).

Alternative 1, the no-action alternative, proposes no timber harvest and thus has no effect on existing habitat. Among the action alternatives, Alternatives 2 and 5 harvest roughly the same amount of productive old growth; Alternative 2 has a slightly higher total harvest than Alternative 5, but is slightly lower in harvest of high-volume stands (43 versus 47 percent,

respectively). Alternatives 3, 4, and 6 harvest greater amounts of productive old growth than Alternatives 2 and 5. Alternative 3 proposes to harvest 28 percent of the high volume productive old growth remaining in the suitable and available productive old-growth timber base, whereas Alternatives 4 and 6 proposed to harvest 31 percent of these stands.

The amount of harvest at the lower elevations is also an important consideration, especially for Sitka black-tailed deer and other species needing habitat cover during the winter. Table Wildlife-2 displays harvest by alternative for four elevational bands. Alternative 2 harvests the fewest low-elevation acres, followed by Alternatives 5, 3, then 4 and 6.

Table Wildlife-2
Harvest of Productive Old Growth Within Elevational Bands (Acres)*

Elevation (feet)	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
0-800	0	79	161	188	105	188
800-1,200	0	203	380	480	271	480
1,200-1,500	0	102	169	221	30	221
>1,500	0	54	111	122	15	122

Source: GIS Database
* Numbers differ from total harvest due to the way the GIS database is coded.

Effects on MIS

The previous section discussed changes to wildlife habitats used by Project Area species, including management indicator species. This section discusses how those changes affect the potential habitat capability for each MIS.

Sitka Black-tailed Deer

As noted previously, the deer model estimates the capability of habitats to support deer during winter and does not reflect actual populations in the Project Area. Model outputs are more useful for comparing relative changes by alternative and do not indicate actual effects to individual animals. Results of the Tongass National Forest deer model are displayed in Table Wildlife-3. Table values are expressed as numbers of animals sustainable over the Project Area. Deer habitat capability of the Project Area has declined by 40 percent since timber harvest began in the 1950's. The Luck Lake alternatives would add another five to six percent to that decline; the effect is smallest in Alternative 2, greatest in Alternatives 4 and 6. These numbers do not reflect the assumed total loss of habitat capability on state and private lands within the Project Area. Analysis that included state and private land management resulted in a 20 percent loss of deer winter habitat across all alternatives.

Table Wildlife-3
Habitat Capability Changes for Sitka Black-tailed Deer

Year	Existing	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6
1954	1,659	n/a	n/a	n/a	n/a	n/a	n/a
1997	990	n/a	n/a	n/a	n/a	n/a	n/a
2004	n/a	954	944	933	931	945	931
2154	n/a	841	824	805	799	823	799

Marten

Timber harvest units in the action alternatives will retain overstory structure consistent with marten standards and guidelines. The partial cut treatments in VCU's 572 and 581 retain 30 percent canopy closure, while units with high-value marten habitat in VCU 582 will retain at least 10 percent existing stand structure. Units that fall into the high volume strata and below 1,500 feet elevation are considered high-value marten habitat. Even with partial cut harvest, these units will fall out of the high-value habitat component since they are no longer high-volume stands. Thus any timber harvest in high-value marten habitat will reduce that habitat capability. The amount of timber harvest in high-value marten habitat is greatest under Alternatives 4 and 6 (508 acres), which represents a 9 percent reduction in high-value marten habitat within the Project Area. The other action alternatives range from 165 acres (3 percent) in Alternative 2 to 447 acres (8 percent) in Alternative 3.

Road construction by alternative is described in the Transportation section. The access and travel management plan reduces open-road density in the Project Area in all action alternatives. After project completion and implementation of the access management plan, the open road density of the Project Area will be reduced from the current 1.1 miles per square mile to 0.67 mile per square mile. This is still at a level estimated to have substantial effects on marten populations by providing access for trapping (Strickland et al. 1982). As further mitigation and in addition to habitat protected in old-growth reserves, under Alternatives 3 and 5, a large area (5184 acres) east of Luck Lake (Ratz roadless area - #512) will have no roads. Such areas of roadless habitat are likely more important to marten conservation than average road densities across project areas. That is, road distribution may play a more important role than road density (Flynn 1993).

Hairy Woodpecker

All planned harvest units in VCU's 572 and 581 will retain at least three snags per acre to meet marten and goshawk standards and guidelines. Future snag recruitment will be provided through 30 percent canopy retention in these same units. Under Alternatives 4 and 6, several units will be harvested in VCU 582 (which has had no harvest to date), and although these will be partial cuts or clearcuts with reserves, they have no specific requirements for snag retention or canopy closure. Based on this information, snag habitat for hairy woodpeckers and other snag-dependent species will be maintained throughout the Project Area, but less so under Alternatives 4 and 6.

Brown Creeper

The brown creeper prefers large-diameter, old-growth trees. Brown creeper habitat can be expected to decline proportionally to the amount of high-volume old-growth forest harvested by alternative. Alternatives 3, 4, and 6, that propose to harvest a higher proportion of high-volume old growth, are expected to have a greater negative impact on Brown creepers than

Alternatives 2 and 5. The 30 percent canopy closure requirement will do little to mitigate loss of habitat. After harvest, between 14,114 acres (Alternative 5) and 13,502 acres (Alternatives 4 and 6) of unharvested productive old-growth forest will remain in the Project Area.

Vancouver Canada Goose

None of the alternatives propose to harvest timber in riparian areas along streams and around lakes, or in the beach and estuary fringes. Forest-wide standards and guidelines for waterfowl management include providing a minimum distance of 330 feet between human activities and significant waterfowl areas, including important nesting habitats. These requirements, combined with the beach and estuary buffers, will protect significant waterfowl areas.

Harvest on wetlands may reduce waterfowl habitat outside the above areas. All alternatives harvest some forested wetlands. Alternatives 5 and 2 harvest the least (270 and 316 acres respectively), Alternatives 3 is next (487 acres), and Alternative 4 and 6 harvest the most forested wetlands (614 acres).

Alexander Archipelago Wolf

Since deer are the primary prey species of wolves in the Project Area, we predict wolf habitat capability to be reduced in proportion to the reduction in deer habitat capability. Implementing any of the action alternatives will result in a reduction in deer habitat capability, as is shown in Table Wildlife-3. The reduction was estimated to be from five to six percent of the present day deer habitat capability.

The access and travel management plan reduces current open-road density in all action alternatives. After project implementation is complete, the current density of 1.1 miles of road per square mile will be reduced to 0.67 miles per square mile. This is within the Forest Plan standards and guidelines for wolf, which recommends an open road density of or less than 0.67 miles per square mile. Access restriction methods (see Transportation section) are prescribed for each road in the Project Area. Closures will reduce the potential wolf harvest; however, closed roads provide walking corridors for hunters who may harvest wolves incidentally while hunting other game species.

The Forest Service has initiated development of a formal Wolf Habitat Management Program that incorporates recommendations and analyses of land and wildlife managers from ADF&G, USFWS, and the Forest Service. The resulting interagency interdisciplinary team has met four times (7/12/99, 8/18/99, 9/16/99, and 10/15/99) and is in the process of analyzing wolf habitat needs and developing a written assessment and Wolf Habitat Management Plan.

Prince of Wales Flying Squirrel

The multiscale old-growth habitat reserve strategy of the Forest Plan was designed to meet the habitat needs of old-growth associated species, including the flying squirrel. For the action alternatives of the Luck Lake Project, old-growth habitat reserves were designed to include more low elevation forest. Prior harvest of riparian corridors in the Project Area has limited connectivity of the forested landscape. Partial cut prescriptions have been designed for all of the action alternatives. Maintaining forest structure components within the harvest units may increase the value of the habitat for flying squirrels compared with clearcutting.

Based on preliminary data from a flying squirrel monitoring study on Prince of Wales Island that is expected to be completed in 2001, the density of flying squirrels in old-growth habitat is approximately 1 squirrel per acre (Smith pers. com.). Flying squirrel habitat can be expected to decline in approximately the same proportion as the amount of old-growth forest

harvested by alternative. Alternatives that increase forest fragmentation at the landscape level will reduce the value of residual patches of old-growth forest. This fragmentation may lead to displacement of local populations because stands of sufficient size to support a population are not maintained, and suitable habitat is not maintained between stands to allow for juvenile dispersal and population interchange. Alternative 1 will maintain habitat in its current condition, as will the three Project Area small old-growth habitat reserves. Alternative 2 emphasizes maintaining low elevation habitat and low elevation connectivity; it has the fewest low-elevation harvest acres, and least harvest of high-volume stands, of the action alternatives. Alternative 5 is fairly comparable to Alternative 2 in this regard; Alternatives 3, 4, and 6 harvest considerably more of these types of habitats.

Cumulative Effects

The cumulative effects on wildlife habitat can be analyzed by assuming that all currently unharvested suitable and available productive old growth (3,800 acres) will be harvested over the next one hundred and fifty years (Table Wildlife-4; Forest Plan Record of Decision). Total productive old-growth forest remaining in the Luck Lake Project Area would be approximately 10,740 acres. This is a 56 percent reduction of the productive old-growth forest that was originally in the Project Area (prior to 1954). These remaining old-growth forest stands would occur primarily in the three small old-growth habitat reserves, old-growth forest within riparian areas and the beach fringe, and other areas of productive old growth considered unsuitable for timber management.

Table Wildlife-4
Cumulative Effects to Wildlife: Habitat Components in 2154

Year	Productive Old Growth (POG) (acres)	High-Volume POG (acres)	Low-Elevation POG (acres)	Estimated Deer Habitat Capability (# of Deer)	Open Road Density (miles per sq. mi.)
1954	24,478	16,634*	15,265	1,659	0.00
1999	14,540	6,799	7,435	990	1.08
2154	10,740	4,886	5,715	815**	0.67

* assumes prior harvest occurred in high volume strata,
** average of model estimates for Alternatives 1-6 with no future entry

The deer model indicates that current habitat capability in the Luck Lake Project Area has been reduced by 40 percent from its 1954 conditions. Under the action alternatives, habitat capability of deer winter range will have undergone a 51 percent reduction from its 1954 capability by the year 2154. This reduction in habitat capability is a result of a loss of critical winter habitat (productive old-growth), coupled with the second growth forest stands entering into the "stem exclusion" phase. Clearcut stands older than 25 years contribute marginally to deer habitat capability. These older clearcut stands enter into the "stem-exclusion" phase at approximately 26 years post-harvest and maintain those characteristics for deer for 100 years or more. Past harvest has reduced habitat and although future timber harvest will further reduce deer habitat capability, the additional reductions are less in comparison. Moreover, if no further timber harvest were to occur in the Luck Lake Project Area, habitat capability would still be reduced to 841 by 2154 (a 49 percent reduction from 1954 habitat capability). If deer habitat capability is reduced to support 841

deer within the Project Area, deer density would be reduced to 15 deer per square mile, which may not be an adequate prey base to sustain the wolf pack that occupies that area (Person et al. 1996). Please note that these numbers do not represent actual deer, but are a model output used to compare alternatives. However, these numbers do give indications of trends that are occurring. Reduction of deer habitat capability through time can be expected to increase further with full implementation of the Forest Plan, which would reduce important high-volume old growth habitat and increase the acreage of forest stands in the "stem exclusion" phase. This estimated long-term reduction in deer habitat capability might affect prey availability for wolves as well as hunting success for human (see Subsistence section of this chapter).

Closure of all new roads built for the Luck Lake Project, as well as 22.8 miles of currently open roads after timber harvest is complete, will help to mitigate the loss of deer habitat and meet the variety of access management objectives. This action will reduce the density of open roads within the Project Area to 0.67 mi/mi^2, a level compatible with Forest Plan standards and guidelines for deer habitat capability, as updated in the ROD.

At this time, data is being collected to determine if the old-growth reserve strategy is adequate to protect the viability of endemic small mammals such as the flying squirrel on Prince of Wales Island and other old-growth associated wildlife species such as the brown creeper. Part of the Forest Service's biodiversity monitoring provisions under the Forest Plan allows for a constant updating of sensitive species, including recommendations by USFWS, ADF&G, and other state and Federal agencies. The USDA Forest Service, Pacific Northwest Research Station began a study of the Prince of Wales flying squirrel and 1998, and it is continuing into its third year. The objectives of the study are to design a sampling protocol to assess the population status of the squirrel in varying forest habitats, and to develop a preliminary habitat model to assess the effects of habitat modification on the Prince of Wales flying squirrel (Smith and Nichols 1998). Once this study is completed, a more rigorous analysis of the cumulative effects at the project level may be possible.

Mitigation

The primary wildlife direction is included in the Forest Plan, Chapters 3 (Land Use Designations, including Old-growth Habitat) and 4 (the Forest-wide standards and guidelines), and Appendix K. The unit and road cards (Appendices B and C of the Draft EIS and Appendices 2 and 3 of the ROD for the Selected Alternative) for the Luck Lake Project contain additional site-specific implementation requirements. After project completion, all new project roads and many others in the area will be closed. Two of the Project Area's three small old-growth habitat reserves were relocated or redesigned to include more low elevation habitat for deer (see Biodiversity and Old Growth).

Chapter 4

Lists

Chapter 4

Lists

List of Preparers

The following is a list of contributors to this EIS. Other Forest Service employees contributed to the completion of this document through their assistance in support functions. Their help is greatly appreciated.

Members of the Interdisciplinary Team (IDT)

James F. Baichtal, Geologist

Education

Associate Science Degree, LCC, Longview, WA, 1977
B.S. in Geology, Washington State University, 1980
M.S. in Geology, Washington State University, 1982
Forest Service: 14 years
Forest Geologist, Tongass NF, Ketchikan Area, 8 years
Resource Geologist, Umpqua NF, Roseburg, OR, 2.5 years
Engineering Geologist, Ochoco NF, Prineville, OR, 3.5 years
Other Relevant Experience
Engineering Geologist, U.S. Army Corps of Engineers, Ft. Worth, TX, 1.5 years
Instructor, Geology Field Camp for Paleontology Lab, Washington State University, 2 summers, 1978/79
Operated a Geologic consulting business, Roseburg, OR

Jim Beard, Fish Biologist

Education

53 units, Fisheries major, California State University-Humboldt
14 units, Biology major, Monterey Peninsula Junior College
40 units, Zoology major, California State University-Long Beach
28 units, Biology major, California State College-Dominguez Hills
A.A., Biology, Los Angeles Harbor Junior College, 1976
Forest Service: 13 years
Fisheries Biologist, Tongass NF, Thorne Bay RD, 7 years
Fish and Wildlife Staff Officer, Tongass NF, Thorne Bay RD, 4 months
Fisheries Biologist, Mount Hood NF, Clackamas RD, 1.3 years
Biological Technician-Fisheries, PSW Forest & Range Exp. Station, Arcata, 1.5 years
Biological Technician-Fisheries, El Dorado NF, Placerville SO, 7 months
Forestry Technician, Angeles NF, Arroyo Seco RD, 5 seasons
Forestry Aid, Los Padres NF, Santa Barbara RD, 1 season

Other Relevant Experience
Marine Biologist, Sea Education Afloat, California, 9 months
Fisheries Technician, Pacific Marine Fisheries Commission, California, 5 years
Biological Technician-Fisheries, USFWS, Colorado River Fish Project
Marine Fisheries Interviewer, KCA Research, California, 1 year

Terry Fifield, Archeologist
Education
B.S., Geology, Sunny College at Cortland, 1978
M.S., Anthropology, Eastern New Mexico University-Portales, 1987
Forest Service: 8 years
Zone Archaeologist, Tongass NF, Craig/Thorne Bay RD's, 4 years
District Archaeologist, Ochoco NF, Burns, OR, 2 years
Archaeologist, Tongass NF, Ketchikan Area, 2 years
Other Relevant Experience
Archaeologist Crew Chief, USDI National Park Service, Anchorage, AK, 1 year
Archaeologist, Bureau of Indian Affairs, Anchorage, AK, 2 years
Archaeologist, Eastern New Mexico University, 5 years intern
Archaeologist Technician, BIA, Anchorage, AK, 2 years
Archaeologist, BLM, Albuquerque, NM, 1 year

Cheri Ford, Wildlife Biologist
Education
B.S., Wildlife Biology, University of Montana, 1988
B.S., Forestry, University of Montana, 1990
Forest Service: 11 years
Wildlife Program Manager, Region 9, 1 year
Wildlife Biologist , Tongass NF, Thorne Bay RD, 4 years
Fish and Wildlife Staff Officer, Tongass NF, Thorne Bay RD, 3 years
Wildlife Biologist, Bitterroot NF, Stevensville RD, 1 year
Wildlife Biologist, Lolo NF, SO, 1 year
Soils Co-op, Bitterroot NF, Sula RD, 1 season

Tom Ford, Forester/Luck Lake Draft EIS Team Leader
Education
B.S., Forestry, University of Montana, 1990
Forest Service: 10 years
Appeals and Litigation Coordinator, Region 9, 1 year
Environmental Coordinator, Tongass NF, Thorne Bay RD, 1 year
Presale Forester, Tongass NF, Thorne Bay RD, 6 years
Silviculture Technician, Bitterroot NF, Stevensville RD, 2 years

Eric L. Johansen, Fish Biologist
Education
B.S., Fisheries Science, University of Alaska-Fairbanks, 1990
Forest Service: 8.5 years
Fisheries Biologist, Chugach NF, Seward RD, 1.5 years
Fisheries Biologist, Tongass NF, Thorne Bay RD, 7 years
Other Relevant Experience
Fisheries Technician III, Alaska Dept. of Fish & Game, 5 seasons

Cass Klee, GIS Analyst
Education
12 units, Graduate level GIS and Land Use Planning Seminars, Humboldt State University 1988 and Oregon State University 1993.
B.S., Natural Resource Planning, Humboldt State University 1988.
Forest Service: 9 years
GIS Analyst, Tongass NF, Thorne Bay RD, 4 years
Forestry Technician, Tongass NF, Thorne Bay RD, 5 years

Ellen Lance, Wildlife Biologist
Education
B.S., Wildlife and Fisheries Management, University of Arizona, 1985
M.S., Wildlife Biology, University of Alaska, Fairbanks, 1995
Forest Service: 5 years
Wildlife Biologist, Tongass NF, Thorne Bay RD, 5 months
Biological Technician, Chugach NF, Seward RD, 5 seasons
Biological Technician, Chugach NF, Cordova RD, 2 seasons
Biological Technician, Chugach NF, PNW, Copper River Delta Institute, 2 seasons
Biological Technician, Wenatchee NF, Natches RD, 2 seasons
Other Relevant Experience
Biological Technician, US Fish and Wildlife Service, Arctic National Wildlife Refuge, 1 season

Dennis Landwehr, Soil Scientist
Education
B.S., Forest Management with Soils minor, University of Wisconsin-Stephens Point, 1985
Forest Service: 11 years
Soil Scientist, Tongass NF, Ketchikan Area SO, 11 years
Other Relevant Experience
Soil Scientist, Natural Resource Conservation Service, Illinois, 1.5 years
Soil Scientist, Natural Resource Conservation Service, Washington, 5 months
Soil Conservationist, Natural Resource Conservation Service, Wisconsin, 1 year

Thomas Marks, Forester
Education
A.S., Forest Technician Certificate, Sierra College, 1976
Professional Forestry Training Program, California Polytechnic University, 1989
Forest Service: 22 years
Timber Management Assistant, Tongass NF, Thorne Bay RD, 2 years
Planning Forester, Tongass NF, Ketchikan RD, 3 years
Sale Preparation Forester, Tongass NF, Ketchikan RD, 3 years
Timber Sale Layout Technician/NEPA, Klamath NF, Goosenest RD, 4 years
Marking Crew Foreman, Klamath NF, Goosenest RD, 4 years
Silviculture Foreman, Klamath NF, Goosenest RD, 4 years
Marking Crew Foreman, Tahoe NF, Sierraville RD, 4 seasons
Other Relevant Experience:
Forest Engineering Institute, Oregon State University, 1992
Certified Tree Measurement Specialist, 1983
Advanced Cruiser/District Check Cruiser since 1984

Christine Minnillo, Writer/Editor and Luck Lake Final EIS Team Leader
Education
B.S., Forest Management, Oregon State University, 1992
Forest Service: 7 years
Writer/Editor, Tongass NF, Thorne Bay RD, 2 years
Forester, Tongass NF, Thorne Bay RD, 5 years

James D. Rhodes, Civil Engineer
Education
Forest Engineering Institute IV, Oregon State University, 1975
B.S., Civil Engineering, St. Martin's College, 1967
Forest Service: 28 years
Transportation Planner, Tongass NF, Ketchikan Area, 19 years
Project Engineer, Tongass NF, Ketchikan Area, 2 years
Preconstruction Engineer, Tongass NF, Ketchikan Area, 2.5 years
Design Engineer, Gifford Pinchot NF, Engineering Zone 3, 2 years
Construction Engineer, Gifford Pinchot NF, Engineering Zone 1, 2.5 years
Other Relevant Experience
U.S. Army Corps of Engineers, 3 years

Amy Lee Russell, Wildlife Biologist
Education
B.S., Forest Wildlife Management, Stephen F. Austin State University, 1992
Forest Service: 5 years
Wildlife Biologist, Tongass NF, Thorne Bay RD, 5 years
Other Relevant Experience
Wildlife Biologist, Alaska Department of Fish and Game, 1 year

Patrick Tierney, Silviculturist
Education
10 Credits, Various Short Courses, Technical Sessions and Workshops, USDA Forest Service and Society of American Foresters, 1980 to Present
4 Credits, Stand Dynamics, USDA Forest Service and University of Washington, 1995
4 Credits, Managing Forest Structure, Oregon State University, 1989
24 Credits, Silviculture Institute, Oregon State University and University of Washington, 1988
B.S., Natural Resource Management/Forestry, Cook College, Rutgers University, 1978
Forest Service: 20 years
Certified Silviculturist, Tongass NF, Thorne Bay RD, 9 years
Assistant Silviculturist, Tongass NF, Thorne Bay RD, 5 years
Lands, Minerals, and Special Use Forester, Toiyabe NF, Austin RD, 3 years
Assistant Cadastral Surveyor, Toiyabe NF, 3 years
Other Relevant Experience
Planning and Zoning Commission, City of Thorne Bay, Alaska, 11 years
Platting Board, City of Thorne Bay, Alaska, 11 years
Coastal Management Review Board, City of Thorne Bay, Alaska, 7 years

Robert W. Wetherell, Landscape Architect
Education
B.L.A. Landscape Architecture, University of Georgia, 1985
Forest Service: 12 years
Landscape Architect, Tongass NF, Thorne Bay RD, 11 years
Landscape Architect, Chugach NF Supervisors Office, 1 year

Additional Support

Thomas Belfield - Field Recon., Botany
Cole Crocker-Bedford – Wildlife
Eric Johnson - Field Recon., Streams & Watershed Analysis
Stephen Levesque – Hydrology
Ron Medel – Watershed Analysis
Bruce Rene - Writer/Editor
Craig Trulock – Environmental Coordination
Peggy Woodworth - Lands/Permits
Jim Zelenak – Wildlife

Glossary

Access
The opportunity to approach, enter, and make use of public lands.

Access Management
Acquiring rights and developing and maintaining facilities needed by people to get to and move through public lands (physical attributes).

Active Channel
Unstable portion of a stream where stream channels are frequently changing course.

Adfluvial Fish
Species of populations of fish that do not go to sea, but live in lakes, and enter streams to spawn.

Aerial Harvest Systems
Harvesting methods in which the cut logs are moved from the stump to the loading area or log deck without touching the ground, for example helicopter logging.

Alaska National Interest Lands Conservation Act (ANILCA)
Passed by Congress in 1980, this legislation designated 14 National Forest wilderness areas in Southeast Alaska. The Alaska National Interest Lands Conservation Act of December 2, 1980. Public Law 96-487, 96th Congress, 94 Stat. 2371-2551. In Section 810, it requires evaluations of subsistence impacts before changing the use of these lands.

Alaska Native Claims Settlement Act (ANCSA)
Public Law 92-203, 92nd Congress, 85 Stat. 2371-2551. Approved December 18, 1971, the Alaska Native Claims Settlement Act (ANCSA) provides for the settlement of certain land claims of Alaska natives and for other purposes.

Alluvial Fan
A cone-shaped deposit of organic and mineral material made by a stream where it runs out onto a level plain or meets a slower stream.

Alpine
Parts of mountains above tree growth and/or the organisms living there.

Alternative
One of several policies, plans, or projects proposed for decision making.

Anadromous Fish
Anadromous fish (such as salmon, steelhead, and sea-run cutthroat trout) spend part of their lives in freshwater and part of their lives in saltwater.

Anadromous Species
One whose individuals are born in freshwater but migrate to and feed in the sea before returning to freshwater to breed.

Background
The distant part of a landscape. The seen or viewed area located from three or five miles to infinity from the viewer. (See "Foreground" and "Middleground".)

Bedload
Sand, silt, and gravel, or soil and rock debris rolled along the bottom of a stream by the moving water.

Best Management Practice (BMP)
Practices used for the protection of water quality. BMP's are designed to prevent or reduce the amount of pollution from nonpoint sources or other adverse water quality impacts while meeting other goals and objectives. BMP's are standards to be achieved, not detailed or site specific prescriptions or solutions. BMP's as defined in the USDA Forest Service Soil & Water Conservation Handbook are mandated for use in Region 10 under the Tongass Timber Reform Act.

Biological Diversity (Biodiversity)
The variety of life in all its forms and at all levels. This includes the various kinds and combinations of: genes; species of plants, animals, and microorganisms; populations; communities; and ecosystems. It also includes the physical and ecological processes that allow all levels to interact and survive. The most familiar level of biological diversity is the species level, which is the number and abundance of plants, animals, and microorganisms.

Biological Potential
The maximum possible output of a given resource limited only by its inherent physical and biological characteristics.

Blowdown
See windthrow.

Board Foot (BF)
A unit of wood 12" X 12" X 1". One acre of commercial timber in Southeast Alaska on the average yields 28,000-34,000 board feet per acre (ranging from 8,000-90,000 board feet per acre). One million board feet (MMBF) would be the volume of wood covering one acre two feet thick. One million board feet yields approximately enough timber to build 120 houses or 75,555 pounds of dissolving pulp.

Bole
Trunk of the tree.

Braided Streams or Channels
A stream flowing in several dividing and reuniting channels resembling the strands of a braid, the cause of division being the obstruction by sediment deposited by the stream.

Brush Disposal
Cleanup and disposal of slash and other hazardous fuels within the forest or project areas.

Buffer
An area around a resource where timber harvest is restricted or prohibited. For example, the Tongass Timber Reform Act (TTRA) requires that timber harvest be prohibited in an area no less than 100 feet on each side of all Class I streams and Class II streams which flow directly into Class I streams. This 100-foot area is known as a "stream buffer".

Capability
An evaluation of a resource's inherent potential for use.

Channel Migration
Movement of a stream or river channel within a floodplain area usually over an extended period of time.

Clearcut
The harvesting in one cut of all trees on an area. The area harvested may be a patch, strip, or stand large enough to be mapped or recorded as a separate class in planning for sustained yield. Clearcut size on the Tongass National Forest is limited to 100 acres, except for specific conditions noted in the Alaska Regional Guide.

Climax
A community of plants and animals which is relatively stable over time and which represents the late stages of succession under current climate and soil conditions.

Code of Federal Regulations (CFR)
A codification of the general and permanent rules published in the Federal Register by the executive departments and agencies of the Federal Government.

Commercial Forest Land (CFL)
Forest land that is producing or is capable of producing crops of industrial wood and (a) has not been withdrawn by Congress, the Secretary, or the Chief; (b) existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity or watershed conditions; and (c) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that adequate restocking can be attained within 5 years after final harvesting.

Commercial Thinning
Thinning a stand where the trees to be removed are large enough to sell.

Corridor
Connective links of certain types of vegetation between patches of suitable habitat which are necessary for certain species to facilitate movement of individuals between patches of suitable habitat. Also refers to transportation or utility rights-of-way.

Cover
Refers to trees, shrubs, or other landscape features that allow an animal to partly or fully conceal itself.

Critical Habitat
Specific terrain within the geographical area occupied by threatened or endangered species. Physical and biological features that are essential to conservation of the species and which may require special management considerations or protection are found in these areas.

Crown
The tree canopy. The upper part of a tree or woody plant that carries the main branch system and foliage.

Cruise
Refers to the general activity of determining timber volumes and quality as opposed to a specific method.

Cubic Foot (CF)
Equivalent to a cube of wood with one-foot sides. The cubic foot volume is a measure of the total sound wood in a tree and is a more accurate depiction of wood volume than the board foot measure.

Cull Logs
Trees that do not meet certain quality specifications.

Cultural Resources
Historic or prehistoric objects, sites, buildings, structures, and their remains, resulting from past human activities.

Cumulative Effects
The impacts on the environment resulting from additional incremental impacts of past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions occurring over time.

Cutover
Areas harvested recently.

DBH
Diameter Breast Height. The diameter of a tree measured 4 feet 6 inches from the ground.

Debris Flow
A general term for all types of rapid movement of debris downslope.

Debris Torrents
Landslides that occur as a result of debris; avalanche materials which either dam a channel temporarily or accumulate behind temporary obstructions such as logs and forest debris.

Deer Winter Range
Locations that provide food and shelter for Sitka black-tail deer under moderately severe to severe winter conditions.

Degradation
The general lowering of the surface of the land by erosive processes, especially by the removal of material through erosion and transportation by flowing water.

Developed Recreation
Recreation that requires facilities that, in turn, result in concentrated use of an area. Facilities in these areas might include roads, parking lots, picnic tables, toilets, drinking water, and buildings.

Direct Employment
The jobs that are immediately associated with the Long-term Contract Timber Sale, including, for example, logging, sawmills, and pulp mills.

Discount Rate
The rate used to adjust future benefits or costs to their present value.

Dissolved Oxygen
The amount of free (not chemically combined) oxygen in water.

Diversity
The distribution and abundance of different plant and animal communities and species within the area controlled by the Forest Plan.

Draft Environmental Impact Statement (Draft EIS)
A statement of environmental effects for a major Federal action which is released to the public and other agencies for comment and review prior to a final management decision. Required by Section 102 of the National Environmental Policy Act (NEPA).

Eagle Nest Tree Buffer Zone
A 330-foot radius around eagle nest trees established in an Agreement between the U.S. Fish and Wildlife Service and the Forest Service.

Ecosystem
A community of organisms and its physical setting. An ecosystem, whether a fallen log or an entire watershed, includes resident organisms, non-living components such as soil nutrients, inputs such as rainfall, and outputs such as organisms that disperse to other ecosystems.

Effects
Effects, impacts, and consequences as used in this environmental impact statement are synonymous. Effects may be ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historical, cultural, economic, or social, and may be direct, indirect, or cumulative

Direct Effects: Results of an action occurring when and where the action takes place.

Indirect Effects: Results of an action occurring at a location other than where the action takes place and/or later in time, but in the reasonably foreseeable future.

Cumulative Effects: See Cumulative Effects.

Encumbrance
A claim, lien, charge, or liability attached to and binding real property.

Endangered Species
Any species of animal or plant that is in danger of extinction throughout all or a significant portion of its range. Plant or animal species identified by the Secretary of the Interior as endangered in accordance with the 1973 Endangered Species Act. See also, threatened species, sensitive species.

Environmental Analysis (EA)
A comprehensive evaluation of alternative actions and their predictable short-term and long-term environmental effects, which include physical, biological, economic, social, and environmental design factors and their interactions. An EA is less comprehensive than an Environmental Impact Statement (EIS), and may result in a Finding of No Significant Impact; should the EA reveal significant impacts, a full EIS must then be conducted.

Erosion
The wearing away of the land surface by running water, wind, ice, gravity, or other geological activities.

Escapement
Adult anadromous fish that escape from all causes of mortality (natural or human-caused) to return to streams to spawn.

Estuary
For the purpose of this EIS process, estuary refers to the relatively flat, intertidal, and upland areas generally found at the heads of bays and mouths of streams. They are predominately mud and grass flats and are unforested except for scattered spruce or cottonwood.

Even-aged Management
The application of a combination of actions that result in the creation of stands in which trees of essentially the same age grow together. The difference in age between trees in forming the main canopy level of a stand usually does not exceed 20 percent of that age of the stand at harvest rotation age. Clearcut, shelterwood, or seed tree cutting methods produce even-aged stands.

Executive Order
An order or regulation issued by the President or some administrative authority under his or her direction.

Existing Visual Condition
The level of visual quality or condition presently occurring on the ground. The six existing visual condition categories are:

Type I: Natural Condition. Areas in which only ecological change has taken place. Corresponds to the Preservation VQO.

Type II: Natural appearing. Areas in which changes in the landscape are not noticed by the average forest visitor unless pointed out. Corresponds to the Retention VQO.

Type III: Slightly altered. Areas in which changes in the landscape are noticed, but do not attract attention. Corresponds to the Partial Retention VQO.

Type IV: Moderately altered. Areas in which changes in the landscape are easily noticed and may attract attention. Corresponds to the Modification VQO.

Type V: Heavily altered. Areas in which changes in the landscape obviously appear to be major disturbances and stand out as a dominating impression of the landscape. Corresponds to the Maximum Modification VQO.

Type VI: Drastically altered. Areas in which changes in the landscape are in glaring contrast to a natural appearance. Not a VQO.

Final Environmental Impact Statement (FEIS)
The final version of the statement of environmental effects required for major federal actions under Section 102 of the National Environmental Policy Act. It is a revision of the draft environmental impact statement (DEIS) to include public and agency responses to the draft. The decision maker chooses which alternative to select from the Final EIS, and subsequently issues a Record of Decision (ROD).

Fiscal Year (FY)
October 1 through September 30, e.g. October 1, 1992 - September 30, 1993 = FY 93.

Floodplain
That portion of a river valley, adjacent to the river channel, which is covered with water when the river overflows its banks at flood stages.

Fluvial
Of or pertaining to streams and rivers.

Foreground
The stand of trees immediately adjacent to a scenic area, recreation facility, or forest highway; area located less than 1/4 mile from the viewer. See also, Background and Middleground.

Forest and Rangeland Renewable Resources Planning Act of 1976 (RPA)
Amended in 1976 by the National Forest Management Act. See RPA Assessment and Program.

Forest or Forest Land
National Forest lands currently supporting or capable of supporting forests at a density of 10 percent crown closure or better. Includes all areas with forest cover, including old growth and second growth, and both commercial and non-commercial forest land.

Forested Wetland
A wetland whose vegetation is characterized by an overstory of trees that are 20 feet or taller.

FSH
Forest Service Handbook.

FSM
Forest Service Manual.

Geographic Information System (GIS)
An information processing technology to input, store, manipulate, analyze, and display spatial and attribute data to support the decision-making process. It is a system of computer maps with corresponding site specific information that can be electronically combined to provide reports and maps.

Geomorphology
The study of the forms of the land surface and the processes producing them. Also the study of the underlying rocks or parent materials and the landforms present which were formed in geological time.

Groundwater
Water within the earth that supplies wells and springs.

Guideline
A preferred or advisable course of action or level of attainment designed to promote achievement of goals and objectives.

Habitat
The sum total of environmental conditions of a specific place occupied by an organism, population, or community of plants and animals.

Habitat Capability
The number of healthy animals that a habitat can sustain. Used in wildlife models to calculate rough population estimates for management indicator species.

Habitat Improvement
Management of wildlife and fish habitat to increase their capability.

Hard Snags/Soft Snags
Hard snags are dead trees which have little decay and are generally still hard wood. Soft snags are dead trees which have a considerable amount of decay and are generally soft, broken wood.

IMPLAN
A computer-based system used by the Forest Service for constructing nonsurvey input/output models to measure economic input. The system includes a data base for all counties in the United States and a set of computer programs to retrieve data and perform the computational tasks for input/output analysis.

Indirect Employment
The jobs in service industries that are associated with the Long-term Contract timber sale including, for example, suppliers of logging and milling equipment.

Inoperable Timber
Timber that cannot be harvested by any proven method because of potential resource damage, extremely adverse economic considerations, or physical limitations.

Interdisciplinary Team (IDT)
A group of people with different backgrounds assembled to research, analyze, and write a project Environmental Impact Statement. The team is assembled out of recognition that no one scientific discipline is sufficiently broad enough to adequately analyze a proposed action and its alternatives.

Issue
A point, matter, or section of public discussion or interest to be addressed or decided.

Knutsen-Vandenburg Fund (KV)
The portion of timber sale receipts collected and used for reforestation and other renewable resource projects on the sale area.

Land Allocation
The decision to use land for various resource management objectives to best satisfy the issues, concerns and opportunities and meet assigned forest output targets.

Land Use Designation
A defined area of land specific to which management direction is applied in the Forest Plan.

Land Use Prescriptions
Specific management direction applied to a defined area of land to attain multiple use and other goals and objectives.

Landslides
The moderately rapid to rapid down slope movement of soil and rock materials that may or may not be water-saturated.

Large Woody Debris
Any large piece of relatively stable woody material having a diameter of at least four inches and a length greater than three feet that intrudes into the stream channel. Also called Large Organic Debris (LOD).

Log Transfer Facility (LTF)
A facility that is used for transferring commercially harvested logs to and from a vessel or log raft, or the formation of a log raft. It is wholly or partially constructed in waters of the United States and location and construction are regulated by the 1987 Amendments to the Clean Water Act. Formerly termed "terminal transfer facility" or "log dump".

Logging Systems

Highlead: A cable yarding system, using a two-drum yarder, in which lead blocks are hung on a spar or tower to provide lift to the front end of the logs. Grabinski is a modified highlead cable system.

Aerial Logging Systems: Systems where the cut logs are moved from the stump to the loading area or log deck without touching the ground.

Logging Systems (cont.)

Live skyline/gravity carriage return: A two-drum, live skyline yarding system in which the carriage moves down the skyline by gravity; thus, is restricted to uphill yarding; the skyline is lowered to attach logs then raised and pulled to the landing by the mainline.

Live skyline/haulback required: A live skyline yarding system composed of skyline, mainline, and haulback; the carriage is pulled to the woods by the haulback; the skyline is lowered to permit the chokers to be attached to the carriage, and the turn is brought to the landing by the mainline.

Running skyline: A yarding system with three suspended moving lines, generally referred to as the main, haulback, and slack-pulling, that when properly tensioned will provide lift, travel, and control to the carriage; normally indicates a gantry type tower and a three-drum yarder.

Standing skyline: Used wherever yarding distances or span distances exceed the capability of live skyline equipment.

Multispan skyline: European equipment is commonly associated with this.

Tractor: Used to describe the full range of surface skidding equipment, designed to operate on level to downhill settings.

Shovel: A system of short-distance logging in which logs are moved from the stump to the landing by repeated swinging with a swing-boom log loader; the loader is walked off the haul road and out into the harvest unit; logs are moved and decked progressively closer to the haul road with each pass of the loader; when logs are finally decked at roadside, the same loader, or a different loader, loads out trucks. On gentle ground, logs are either heeled and swung or dragged by the boom as it rotates; larger log length and tree length logs are usually dragged to maintain machine stability. Soils should be moderate to well drained and side slopes must be less than 20 percent; passes or stripes should be kept to a maximum of four.

Helicopter: Flight path cannot exceed 40 percent downhill or 30 percent uphill; landings must be selected so there is adequate room for the operation and so that the helicopter can make an upwind approach to the drop zone.

A-frame: Beach fringe timber which is logged with a float mounted yarder typically rigged in a highlead configuration for direct A-frame yarding.

Cold-deck and swing: Planned to access areas not suitable for skyline operations.

MBF

A thousand board feet net sawlog and utility volume.

MMBF
A million board feet net sawlog and utility volume.

MMCF
A million cubic feet net sawlog and utility volume.

Management Indicator Species (MIS)
Species selected in a planning process that are used to monitor the effects of planned management activities on viable populations of wildlife and fish, including those that are socially or economically important.

Management Prescriptions
Method of classifying land uses presented in the 1997 Tongass Land and Resource Management Plan (Forest Plan). Replaces the land use designations originally presented in the Forest Plan.

Management Requirement
Standards for resource protection, vegetation manipulation, silvicultural practices, even-aged management, riparian areas, soil and water and diversity, to be met in accomplishing National Forest System goals and objectives (see 36 CFR 219.17).

Mass Failure
The downslope movement of a block or mass of soil. This usually occurs under conditions of high soil moisture and does not include individual soil particles displaced as surface erosion.

Maritime Climate
Weather conditions controlled by an oceanic environment characterized by small annual temperature ranges and high precipitation.

McGilvery (Soil series)
Soil series which represents the only well-drained organic soil found in the Ketchikan Area. It is composed of a thin surface layer (less than 8 inches deep) of organic material overlying bedrock. These soils are associated with cliffs and rock outcrops, and are sensitive to disturbance.

Memorandum of Understanding (MOU)
A legal agreement between the Forest Service and others agencies resulting from consultation between agencies that states specific measures the agencies will follow to accomplish a large or complex project. A memorandum of understanding is not a fund obligating document.

Microclimate
The temperature, moisture, wind, pressure, and evaporation (climate) of a very small area that differs from the general climate of the larger surrounding area.

Middleground
The visible terrain beyond the foreground where individual trees are still visible but do not stand out distinctly for the landscape; area located from 1/4 to 5 miles from the viewer. See also, Foreground and Background.

Mineral Soils
Soils consisting predominately of, and having its properties determined by, mineral material.

Minimum Viable Population
A population with the estimated numbers and distribution of reproductive individuals to maintain the population over time.

Mining Claims
A geographic area of the public lands held under the general mining laws in which the right of exclusive possession is vested in the locator of a valuable mineral deposit.

Mitigation
Measures designed to counteract environmental impacts or to make impacts less severe. These may include: avoiding an impact by not taking a certain action or part of an action; minimizing an impact by limiting the degree or magnitude of an action and its implementation; rectifying the impact by repairing, rehabilitating, or restoring the affected environment; reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or compensating for the impact by replacing or providing substitute resources or environments.

Mixed Conifer
In Southeast Alaska, mixed conifer stands usually consist of western hemlock, mountain hemlock, Alaska yellowcedar, Western redcedar, and Sitka spruce species. Shore pine may occasionally be present depending on individual sites.

Model
A representation of reality used to describe, analyze, or understand a particular concept. A model may be a relatively simple qualitative description of a system or organization, or a highly abstract set of mathematical equations. A model has limits to its effectiveness, and is used as one of several tools to analyze a problem.

Monitoring
A process of collecting information to evaluate whether or not objectives of a project and its mitigation plan are being realized. Monitoring can occur at different levels: to confirm whether mitigation measures were carried out in the manner called for, to determine whether the mitigation measures were effective, or to validate whether overall goals and objectives were appropriate. Different levels call for different methods of monitoring.

Multiple-aged Stands
An intermediate form of stand structure between even and uneven-aged stands. These stands generally have two or three distinct tree canopy levels occurring within a single stand.

Multiple Use
The management of all the various renewable resources of the National Forest System to be used in the combination that will best met the needs of the American people.

Muskeg
In Southeast Alaska, a type of bog that has developed over thousands of years in depressions or flat areas on gentle to steep slopes. Also called peatlands.

National Environmental Policy Act (NEPA) of 1969
An Act to declare a national policy which will encourage productive and enjoyable harmony between humankind and the environment, to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, to enrich the understanding of the ecological systems and natural resources important to the Nation, and to establish a Council on Environmental Quality (The Principal Laws Relating to Forest Service Activities, Agricultural Handbook 453. USDA Forest Service, 359 pp.).

National Forest Management Act (NFMA)
A law passed in 1976 as an amendment to the Forest and Rangeland Renewable Resources Planning Act requiring the preparation of Regional Guides and Forest Plans and the preparation of regulations to guide that development.

National Wild and Scenic River System
Rivers with outstanding scenic, recreational, geological, fish and wildlife, historic, cultural, or other similar values designated by Congress under the Wild and Scenic Rivers Act of 1968 and amended in 1986, for preservation of their free-flowing condition. May be classified and administered under one or more of the following categories: Wild, Scenic, and/or Recreational.

Native Selection
Application by Native corporations and individuals to a portion of the USDI Bureau of Land Management for conveyance of lands withdrawn in fulfillment of Native entitlements established under ANSCA.

Net Sawlog Volume
Tree or log volume suitable in size and quality to be processed into lumber. In Southeast Alaska, depending on the market, the volume may be processed as pulp or lumber.

No-action Alternative
The most likely condition expected to exist in the future if current management direction were to continue unchanged.

Non-commercial Forest Land
Land with more than 10 percent cover of commercial tree species but not qualifying as Commercial Forest land.

Non-commercial species
Species that have no economic values at this time nor anticipated timber value within the near future.

Non-Forest Land
Land that has never supported forests and lands formerly forested but now developed for such nonforest uses as crops, improved pasture, etc.

Notice of Intent (NOI)
A notice printed in the Federal Register announcing that an Environmental Impact Statement will be prepared. The NOI must describe the proposed action and possible alternatives, describe the agency's proposed scoping process, and provide a contact person for further information.

Objectives
The precise steps to be taken and the resources to be used in achieving goals.

Offering
A Forest Service specification of timber harvest units, subdivisions, roads, and other facilities and operations to meet the requirements of a contract.

Offering Area
A geographic area identified by the Forest Service within which the offering specifications are outlined. One or more offering areas may be identified within all or a portion of a project area.

Old Growth
Ecosystems distinguished by old trees and related structural attributes. Old growth encompasses the later stages of forest stand development that typically differ from earlier stages in a variety of characteristics which may include larger tree size, higher composition, and different ecosystem function. The structure and function of an old-growth ecosystem will be influenced by its stand size and landscape position and context

Organic Soils
Soils that contain a high percentage (generally greater than 20 to 30 percent) of organic matter throughout the soil depth.

Parent Material
The unconsolidated and partially weathered material (or the C Horizon) from which upper layers of soil developed.

Partial Cut
Method of harvesting trees where any number of live stems are left standing in any of various spatial patterns. This does not include clearcutting. Can include seed tree, shelterwood, or other methods.

Patch
A non-linear surface area differing in appearance from its surroundings.

Payments to States
A fund consisting of approximately 25 percent of the gross annual timber receipts received by the National Forests in that state. This is returned to the State for use on roads and schools.

Peak flow
The highest discharge of water recorded over a specified period of time at a given stream location. Often thought of in terms of spring snowmelt, summer, fall, or winter rainy season flows. Also called maximum flow.

Planning Area
The area of the National Forest System controlled by a decision document.

Planning Record
A system that records decisions and activities that result from the process of developing a forest plan, revision, or significant amendment.

Plant Association
Climax plant community type.

Plant Communities
Aggregations of living plants having mutual relationships among themselves and to their environment. More than one individual plant community.

Pole
An immature tree between 5 and 9 inches diameter breast height.

Population Viability
Ability of a population to sustain itself.

Present Net Value (PNV)
The difference between the benefits and costs associated with the alternatives.

Primary Stream Production
Results from photosynthesis by green plants. In streams, includes production from algae and aquatic plants, and from non-stream sources such as leaf litter.

Process Group
A combination of similar channel types based on major differences in landform, gradient, and channel shapes.

Public Participation
Meetings, conferences, seminars, workshops, tours, written comments, responses to survey questionnaires, and similar activities designed and held to obtain comments from the public about Forest Service activities.

Receipts
Those priced benefits for which money will actually be paid to the Forest Service: recreation fees, timber harvest, mineral leases, and special use fees.

Record of Decision
A document separate from but associated with an Environmental Impact Statement which states the decision, identifies all alternatives, specifying which were environmentally preferable, and states whether all practicable means to avoid environmental harm from the alternative have been adopted, and if not, why not.

Reforestation
The natural or artificial restocking of an area with trees.

Regeneration
The process of establishing a new crop of trees on previously harvested land.

Regional Forester
The Forest Service official responsible for administering a single region.

Regional Guide
The guide developed to meet the requirements of the Forest and Rangeland Renewable Resources Planning Act of 1974 as amended. It guides all natural resource management activities and establishes management standards and guidelines for the National Forest System lands within a given region.

Rehabilitation
Actions taken to protect or enhance site productivity, water quality, or other values for a short period of time.

Resident Fish
Fish that are not anadromous and that reside in freshwater on a permanent basis. Resident fish include non-anadromous Dolly Varden char and cutthroat trout.

Resource values
The tangible and intangible worth of forest resources.

Responsible Official
The Forest Service employee who has the delegated authority to make a specific decision.

Restoration
The Long-term placement of land back into its natural condition or state of productivity.

Revegetation
The re-establishment and development of a plant cover. This may take place naturally through the reproductive processes of the existing flora or artificially through the direct action of reforestation or reseeding.

Riparian Area
Area with distinctive resource values and characteristics that contain elements of aquatic and riparian ecosystems, which can be geographically delineated.

Riparian Ecosystem
Land next to water where plants that are dependent on a perpetual source of water occur.

Roads
Arterial: Roads usually developed and operated for Long-term land and resource management purposes to constant service.

Collector: Collects traffic from Forest local roads; usually connects to a Forest arterial or public highway.

Local: Provides access for a specific resource use activity such as a timber sale or recreational site, although other minor uses may be served.

Pre-planned: Roads planned in a prior EIS.

Temporary: For National Forest timber sales, temporary roads are constructed to harvest timber on a one-time basis. These logging roads are not considered part of the permanent Forest transportation network and have stream crossing structures removed, erosion measures put into place, and the road closed to vehicular traffic after harvest is completed.

Roadless Area
An area of undeveloped public land within which there are no improved roads maintained for travel by means of motorized vehicles intended for highway use.

Rotation
The planned number of years (approximately 100 years in Alaska) between the time that a Forest stand is regenerated and its next cutting at a specified stage of maturity.

Rotation Age
The age of a stand when harvested at the end of a rotation.

RPA Assessment and Program
The RPA Assessment is prepared every ten years and describes the potential of the nation's forests and rangelands to provide a sustained flow of goods and services. The RPA Program is prepared every five years to chart the Long-term course of Forest Service management of the National Forests, assistance to State and private landowners, and research. They are prepared in response to Sections 3 and 4 of the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) (16 U.S.C. 1601).

Sawlog
That portion of a tree that is suitable in size and quality for the production of dimension lumber collectively known as sawtimber.

Scheduled Lands
Land suitable and scheduled for timber production and which are in the land base for the calculation of the allowable sale quantity and Long-term sustained yield timber capacity.

Scheduled Timber Harvests
Timber harvests done as part of meeting the allowable sale quality.

Scoping Process
Early and open activities used to determine the scope and significance of a proposed action, what level of analysis is required, what data is needed, and what level of public participation is appropriate. Scoping focuses on the issues surrounding the proposed action, and the range of actions, alternatives, and impacts to considered in an EA or an EIS.

Scrub-Shrub Wetland
Wetlands dominated by woody vegetation less than 20 feet tall. The species include true shrubs, young trees, and trees or shrubs that are small or stunted because of environmental conditions. In Southeast Alaska this includes forested lands where trees are stunted because of poor soil drainage.

Second Growth
Forest growth that has become established following some disturbance such as cutting, serious fire, or insect attack; even-aged stands that will grow back on a site after removal of the previous timber stand.

Sediment
Solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface.

Seed Tree
Small number of seed-bearing trees left singly or in small groups after timber harvest to provide seed for regeneration of the site.

Sensitive Species
Plant and animal species which are susceptible or vulnerable to activity impacts or habitat alterations. Those species that have appeared in the Federal Register as proposed for classification or are under consideration for official listing as endangered or threatened species, that are on a non-official State list, or that are recognized by the regional forester as needing special management to prevent placement on Federal or state lists.

Sensitivity Level
A map inventory that measures peoples' concern for the scenic quality of the National Forests. In 1980, the Tongass National Forest assigned sensitivity levels to land areas viewed from anchorages, plane and boat routes, roads, trails, public-use areas, and recreation cabins.

Level I: Includes all seen areas from primary travel routes, use areas, and water bodies where at least three-fourths of the Forest visitors have a major concern for scenic quality.

Level II: Includes all seen areas from primary travel routes, use areas, and water bodies where at least one-fourth of the Forest visitors have a major concern for scenic quality.

Level III: Includes all seen areas form secondary travel routes, use areas, and water bodies where less than one-fourth of the Forest visitors have a major concern for scenic quality.

Shelterwood Cutting
A harvest method in which most of the trees are removed in an initial entry and some trees are left to naturally reseed the area and provide protection to new seedlings that establish on the site. A second entry is conducted later to remove the remaining trees.

Silviculture
The science of controlling the establishment, composition, and growth of forests.

Single-tree selection
A cutting method to develop and maintain uneven-aged stands by removal of selected trees from specified age classes over the entire stand area in order to meet a predetermined goal of age distribution and species in the remaining stand.

Site Index
A measure of the relative productive capacity of an area for growing wood. Measurement of site index is based on height of the dominant trees in a stand at a given age.

Site Preparation
Manipulation of the vegetation or soil of an area prior to planting or seeding. The manipulation follows harvest, wildfire, or construction in order to encourage the growth of favored species. Site preparation may include the application of herbicides, burning, or cutting of living vegetation that competes with the favored species; tilling the soil; or burning of organic debris (usually logging slash) that makes planting or seeding difficult.

Site Productivity
Production capability of specific areas of land.

Slope Distance
Distance measured along the contour of the ground.

Smolt
Young silvery-colored salmon or trout which move from freshwater streams to saltwater.

Snag
A standing dead tree, usually greater than 5 feet tall and 6 inches in diameter at breast height.

Soil Productivity
The capacity of a soil, in its normal environment, to produce a specific plant or sequence of plants under a specific system of management.

Soil Quality Standards
Standards that are a combination of 1) "threshold" values for severity of soil property alteration, or significant change in soil properties conditions, and 2) a real extent of disturbance.

Special Habitats
Structural elements of ecosystems. These may include, but are not limited to: snags, spawning gravels, fallen trees, aquatic reefs, caves, seeps, and springs.

Split Yarding
The process of separating the direction of timber harvest yarding into opposite directions.

Stand (Tree Stand)
An aggregation of trees occupying a specific area and sufficiently uniform in composition, age arrangement, and condition as to be distinguishable from the forest in adjoining areas.

Standard
A course of action or level of attainment required by the forest plan to promote achievement of goals and objectives.

State Historic Preservation Officer (SHPO)
State appointed official who administers Federal and State programs for cultural resources.

Stocking
The degree of occupancy of land by trees as measured by basal area or number of trees and as compared to a stocking standard; that is, the basal area or number of trees required to fully use the growth potential of the land.

Stream Classes
See Aquatic Habitat Management Unit.

Stream Order
First order streams are the smallest unbranched tributaries; second order streams are initiated by the point where two first order streams meet; third order streams are initiated by the point where two second order streams meet, and so on.

Structural Diversity
The diversity of forest structure, both vertically and horizontally, which provides for a variety of forest habitats such as logs and multi-layered forest canopy for plants and animals.

Stumpage
The value of timber as it stands uncut in terms of dollar value per thousand board feet.

Subsistence
Section 803 of the Alaska National Interest Lands Conservation Act defines subsistence use as, "the customary and traditional uses by rural Alaska residents of wild renewable resources for direct, personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of nonedible by-products of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade."

Subsistence Use Area
Important Subsistence Use Areas include the "most reliable" and "most often hunted" categories from the Tongass Resource Use Cooperative Survey (TRUCS) and from subsistence survey data from ADF&G, the University of Alaska, and the Forest Service, Region 10. Important use areas include both intensive and extensive use areas for subsistence harvest of deer, furbearers, and salmon.

Substantive Comment
A comment that provides factual information, professional opinion, or informed judgement germane to the action being proposed.

Substrate
The type of material in the bed (bottom) of rivers and streams.

Succession
The ecological progression of community change over time, characterized by displacements of species leading towards a stable climax community.

Suitable
Commercial forest land identified as having both the biological capability and availability to produce industrial wood products.

Suitable Forest land
Forest land for which technology is available that will ensure timber production without irreversible resource damage to soils, productivity, or watershed conditions, and for which there is reasonable assurance that such lands can be adequately restocked, and for which there is management direction that indicated that timber production is an appropriate use of that area.

Suspended Sediment
The very fine soil particles which remain in suspension in water for a considerable period of time without contact with the stream or river channel bottom.

Sustained Yield
The amount of renewable resources that can be produced continuously at a given intensity of management.

TLMP
See Tongass Land and Resource Management Plan.

Tentatively Suitable Forest Land
Forest land that is producing or is capable of producing crops of industrial wood and: (a) has not been withdrawn by Congress, the Secretary of Agriculture of the Chief of the Forest Service; (b) existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity, or watershed conditions; (c) existing technology and knowledge, as reflected in current research and experience, provides reasonable assurance that it is possible to restock adequately within 5 years after final harvest; and (d) adequate information is available to project responses to timber management activities.

Thinning
The practice of removing some of the trees in a stand so that the remaining trees will grow faster due to reduced competition for nutrients, water, and sunlight. Thinning may also be done to change the characteristics of a stand or wildlife or other purposes. Thinning may be done at two different stages.

Threatened Species
Plant or animal species which is likely to become endangered throughout all or a significant portion of its range within the foreseeable future, as defined in the Endangered Species Act of 1973, and which has been designated in the Federal Register by the Secretary of the Interior as a threatened species. (See also, endangered species, sensitive species.)

Threshold
The point or level of activity beyond which an undesirable set of responses begins to take place within a given resource system.

Tiering
Eliminating repetitive discussions of the same issue by incorporating by reference. The general discussion in an environmental impact statement of broader scope; e.g., this document is tiered to the Tongass Land Management Plan, as amended.

Timber Appraisal
Establishing the fair market value of timber by taking the selling value minus manufacturing costs, the cost of getting logs from the stump to the manufacturer, and an allowance for profit and risk.

Timber Classification
Forested land is classified under each of the land management alternatives according to how it relates to be management of the timber resource. The following are definitions of timber classifications used for this purpose.

Nonforest: Land that has never supported forests and land formerly forested where use for timber production is precluded by development or other uses.

Forest: Land at least 10-percent stocked (based on crown cover) by forest trees of any size, or formerly having had such tree cover and not currently developed for nonforest use.

Timber Classification, cont.

Suitable or suitable available: Land to be managed for timber production on a regulated basis.

Unsuitable: Forest land withdrawn from timber utilization by statute or administrative regulation (for example, wilderness), or identified as inappropriate for timber production in the Forest planning process.

Commercial forest: Forest land tentatively suitable for the production of continuous crops of timber and that has not been withdrawn.

Timber Harvest Unit

A "Timber Harvest Unit" is a portion of a timber sale within which Forest Service specifies for harvest all or part of the timber to meet the requirements of a timber sale contract.

Timber Stand Improvement (TSI)

All noncommercial intermediate cutting and other treatments to improve composition, condition, and volume growth of a timber stand.

Tongass Land and Resource Management Plan (Forest Plan)

The 10-year land allocation plan for the Tongass National Forest that directs and coordinates planning, the daily uses, and the activities carried out within the forest. Currently under revision.

Turbidity

An indicator of the amount of sediment suspended in water.

Two-aged Method

A harvest method that regenerates and maintains stands with two age classes. The resulting stand may be two-aged or tend toward an uneven-aged condition.

Understory

The trees and shrubs in a forest growing under the canopy or overstory.

Uneven-aged Management

Forest management techniques which simultaneously maintain continuous high-forest cover, recurring regeneration of desirable species, and the orderly growth and development of trees through a range of diameter or age classes. Cutting is usually regulated by specifying the number or proportion of trees of particular sizes to retain within each area, thereby maintaining a planned distribution of size classes.

Unscheduled Lands

Lands suitable but not scheduled for timber production and which are not in the land base for the calculation of the allowable sale quantity nor Long-term sustained yield timber capacity.

Unsuitable

Forest land withdrawn from timber utilization by statute or administrative regulation; for example, wilderness, or identified as not appropriate for timber production in the forest planning process.

Utility Logs

Those logs that do not meet sawlog grade but are suitable for production of firm usable pulp chips.

VAC

See Visual Absorption Capability.

Value Comparison Unit (VCU)

Areas which generally encompass a drainage basin containing one or more large stream systems; boundaries usually follow easily recognizable watershed divides. Established to provide a common set of areas where resource inventories could be conducted and resource interpretations made.

Viable Population

The number of individuals of a species required to ensure the Long-term existence of the species in natural, self-sustaining populations adequately distributed throughout their region.

Viewshed
An expansive landscape or panoramic vista seen from a road, marine water way, or specific viewpoint.

Visual Quality Objectives (VQO)
Measurable standards reflecting five different degrees of landscape alteration based upon a landscape's diversity of natural features and the public's concern for high scenic quality. The five categories of VQO's are:

Preservation: Permits ecological changes only. Applies to wilderness areas and other special classified areas. Management activities are generally not allowed in this setting.

Retention: Provides for management activities that are not visually evident to the casual Forest visitor.

Partial Retention: Management activities remain visually subordinate to the natural landscape.

Modification: Management activities may visually dominate the characteristics landscape. However, activities must borrow from naturally established form-line color and texture so that the visual characteristics resemble natural occurrences within the surrounding area when viewed in the middleground distance.

Maximum Modification: Management activities may dominate the landscape but should appear as a natural occurrence when viewed as background.

V-Notches
A deeply incised valley along some waterways that would look like a "V" from a cross-section. These abrupt changes in terrain features are often used as harvest unit or yarding boundaries.

Volume
Stand volume based on standing net board feet per acre by Scribner Rule.

Volume Strata
Divisions of old-growth timber volume derived from the interpreted timber type data layer (TIMTYP) and the common land unit data layer (CLU). Three volume strata (low, medium, and high) are recognized in the Forest Plan.

Watershed
The area that contributes water to a drainage or stream. Portion of the forest in which all surface water drains to a common point. Watersheds can range from a few tens of acres that drain a single small intermittent stream to many thousands of acres for a stream that drains hundreds of connected intermittent and perennial streams.

Wetland
Areas that are inundated by surface or groundwater frequently enough to support vegetation that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include: swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mudflats, and natural ponds. See the Forest Plan pp. 3-318 and 3-321 for detailed discussion on wetland type definitions.

Wilderness
Areas designated by congressional action under the 1964 Wilderness Act. Wilderness is defined as undeveloped federal land retaining its primeval character and influence without permanent improvements or humans habitation. Wilderness areas are protected and managed to preserve their natural conditions, which generally appear to have been affected primarily by the forces of nature, with the imprint of human activity substantially unnoticeable; have outstanding opportunities for solitude or a primitive and unconfined type of recreation; areas of at least 5,000 acres are of sufficient size to make practical their preservation, enjoyment, and use in an unimpaired condition; and may contain features of scientific, educational, scenic, or historical value as well as ecologic and geologic interest. In Alaska, Wilderness has been designated by ANILCA and TTRA.

Wildlife Analysis Area (WAA)
A division of land used by the Alaska Department of Fish and Game for wildlife analysis.

Wildlife Habitat
The locality where a species may be found and where the essentials for its development and sustained existence are obtained.

Windfirm
Trees that have been exposed to the wind throughout their life and have developed a strong root system or trees that are protected from the wind by terrain features.

Windthrow
The act of trees being uprooted by the wind. In Southeast Alaska, Sitka spruce and hemlock trees are shallow rooted and susceptible to windthrow. There generally are three types of windthrow:

- *Endemic*: where individual trees are blown over;
- *Catastrophic*: where a major windstorm can destroy hundreds of acres; and
- *Management Related*: where the clearing of trees in an area make the adjacent standing trees vulnerable to windthrow.

Winter Range
An area, usually at lower elevation, used by big game during the winter months; usually smaller and better-defined than summer ranges.

Yarding
Hauling timber from the stump to a collection point.

Literature Cited

ADEC. See Alaska Department of Environmental Conservation.

ADF&G. See Alaska Department of Fish and Game.

Agler, B.A., S.J. Kendall, P.E. Seiser, and J.R. Lindell. 1995. Estimates of marine bird and sea otter abundance in Southeast Alaska during summer 1994. USFWS, Anchorage and Juneau, Alaska.

Alaback, P. 1982. Dynamics of understory biomass in Sitka spruce-western hemlock forests of Southeast Alaska. Ecology. 63(6):1932-1948.

Alaback, P. 1988. Endless battles, verdant survivors. Natural History 97.

Alaback, P.B. 1984. Plant succession following logging in the Sitka spruce-western hemlock forests of southeast Alaska: Implications for management. USDA Forest Service, General Technical Report PNW-173. 26 pp.

Alaska Coastal Management Act. 1997.

Alaska Department of Environmental Conservation (ADEC). 1989. Water Quality Standards Regulations 18 AAC 70, 18-2052 (Revised November 1989).

Alaska Department of Fish and Game. 1991. Strategic plan for management of deer in southeast Alaska 1991-1995. Alaska Department of Fish and Game, Douglas.

Alaska Department of Fish and Game. 1997. Deer hunter survey summary statistics. T. Paul and T.B. Straugh editors. Federal Aid in Wildlife Restoration Supplementary Report to the Deer Survey-Inventory Activities 1 July 1996-30 June 1997. Alaska Department of Fish and Game, Division of Wildlife Conservation, Juneau, Alaska.

Alaska Department of Fish and Game. 1998. Deer hunter survey summary statistics. T. Paul and T.B. Straugh editors. Federal Aid in Wildlife Restoration Supplementary Report to the Deer Survey-Inventory Activities 1 July 1997-30 June 1998. Alaska Department of Fish and Game, Division of Wildlife Conservation, Juneau, Alaska.

Alaska Forest Resources and Practices Act. 1979.

Alaska Forest Practices Act. 1990 revision.

Alaska Heritage Resource Survey. Undated. Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation, Office of History and Archaeology, database.

Alaska National Interest Lands Conservation Act (ANILCA). 1980. Public Law 96-487, U.S. Congress, 96th Congress, 16 USC 3101, 94 Stat. 2371-2551.

Alaska National Interest Lands Conservation Act (ANILCA). Section 706(a), Report No. 10. See USDA Forest Service 1990.

Alaska Native Claims Settlement Act (ANCSA). 1971. Public Law 92-203, U.S. Congress, 92nd Congress, 85 Stat. 688-716.

Alaska Regional Guide. See USDA Forest Service 1983.

Alaska Statehood Act of 1959. Public Law 85-508, 72 Stat. 340.

Alaska State Historic Preservation Office. 1990.

American Indian Religious Freedom Act of 1978.

Anthony, R.G., B.D. Bibles, E. Bibles, B. Matzke, C. Miller, M. VanderHeyden. 1997. Assessment of the Potential Effects of Human Activities on Bald Eagle Productivity and Behavior on Prince of Wales Island, Alaska. Contract No. 14-16-0009-1577. Unpublished document. USFS Juneau. 103 pp.

Archaeological Resources Protection Act of 1980.

Barber, K.R. 1983. Use of clearcut habitats by black bears in the Pacific Northwest. M.S. Thesis. Utah State University, Logan. 169 pp.

Bartelme, J.W. 1999. "Implementation of Tongass Land Management Plan". USDA Forest Service, Alaska Region, Juneau, AK.

Bartos, L. 1989. A new look at low flows after logging. Proceedings of Watershed 1989: A Conference on the Stewardship of Soil, Air, and Water Resources. Juneau, Alaska. March, 1989. USDA Forest Service, Alaska Region.

Bassett, R.L., D. A. Boyce, M.H. Reiser, R.T. Graham, and R.T. Reynolds. 1994. Influence of site quality and stand density on Goshawk habitat in southwestern forests. Studies in Avian Biology. 16:41-45.

Beier, P. and J.E. Drennan. 1997. Forest structure and prey abundance in foraging areas of Northern Goshawks. Ecological Applications, 7:564-571.

Bormann, F.H. and G.E. Likens. 1979. Pattern and Process in a Forested Ecosystem. New York, Springer-Verlag.

Brew, D.A. 1996. Geologic Map of the Craig, Dixon Entrance, and Parts of the Ketchikan and Prince Rupert Quadrangles, Southeastern Alaska. Map MF-2319. Miscellaneous Field Studies Map, U.S. Geological Survey.

Brosofske, et.al. 1997. Harvesting Effects on Microclimatic Gradients form Small Streams to Uplands in Western Washington. Ecological Applications. 7(4), pp. 1188-1200.

Cave Resource Protection Act. 1988.

CEQ. See Council on Environmental Quality.

Clean Air Act, as amended (42 U.S.C. 7401 et seq).

Clean Water Amendments ("Federal Water Pollution Control Act Amendments of 1972"). 1972. Public Law 92-500, 86 Stat 816, as amended; 33U.S.C. 1251, et seq. 18 October.

Coastal Zone Management Act of 1972. Public Law 94-370, 90 Stat. 1013; U.S.C. 1982 Title 16, Sec. 1451 et seq. 27 October.

Code of Federal Regulations (CFR). Office of the Federal Register National Archives and Records Administration.
--. 33. 323.4.
--. 40. 230.41(a)(1).

Council on Environmental Quality (CEQ), Executive Office of the President. 1986. Regulations for implementing the procedural provisions of the National Environmental Policy Act. 40 CFR Parts 1500-1508.

Crocker-Bedford, D.C. 1990. Status of the Queen Charlotte goshawk. Unpublished document, USDA Forest Service, Tongass National Forest, Ketchikan, Alaska.

Crocker-Bedford, D.C. 1998. The value of demographic and habitat studies in determining the status of Northern goshawks (*Accipiter gentiles atricapillus*) with special reference to Crocker-Bedford (1990) and Kennedy (1997). The Journal of Raptor Research. 32:329-336.

Crocker-Bedford, D.C. 1999. pers. com. USDA Forest Service, Tongass National Forest, 648 Mission Street, Ketchikan, Alaska.

DeGayner, G. 1996. Black-tailed deer habitat model review meeting notes and model outputs. Unpublished document. USDA Forest Service, Juneau, AK.

DeGraff, R.M., V. Scott, R.H. Hamre, L. Ernest, and S.H. Anderson. 1991. Forest and Rangeland Birds of the United States. USDA Forest Service Handbook #688.

Dellasala, D.A., K. Engel, D.P. Volson, R.L. Fairbanks, W.B. McComb, J. Hagar, and K. Radeke. 1993. Final Report 1993: Evolution of young growth treatments for wildlife. USDA Forest Service, Region 10, Juneau, Alaska.

Doyle, A.T., W. Bruce Dinneford, M.D. Kirchhoff, L.C. Shea, L.H. Suring, D.A. Williamson. 1988. Habitat capability model for Vancouver Canada goose in Southeast Alaska: Nesting and brooding habitats. USDA Forest Service. Draft.

Endangered Species Act of 1973. Public Law 93-205 (87 stat. 884), as amended; 16 U.S.C. 1531-1536, 1538-1540. 28 December.

Erickson, A.W. 1964. An analysis of black bear kill statistics for Michigan. Pages 68-102. In A.W. Erickson, J.E. Nellor, and G.A. Petrides (editors). The black bear in Michigan. Michigan Agriculture Experiment Station Res. Bull. 4.

Erickson, A.W. 1965. The black bear in Alaska: its ecology and management. Alaska Department of Fish and Game Fed. Aid in Wild. Restor. Dept. Prog. W-6-R-5, Work Plan F. 19 pp.

Flynn, R.W. 1993. A strategy for maintaining well-distributed, viable marten populations in southeast Alaska. Pp 206-228. In L.H. Suring, D.C. Crocker-Bedford, R.W. Flynn, C.S. Hale, G.C. Iverson, M.D. Kirchhoff, T.E. Schenck, II, L.C. Shea, and K. Titus editors, A proposed strategy for maintaining well-distributed, viable populations of wildlife associated with old-growth forests in Southeast Alaska: Report of an interagency committee. Unpublished report. USDA Forest Service, Alaska Department of Fish and Game, and USDI Fish and Wildlife Service, Juneau, Alaska.

Flynn, R.W. and L.H. Suring. 1993. Harvest rates of Sitka black-tailed deer populations in Southeast Alaska for land-use planning. Alaska Department of Fish and Game, Douglas, Alaska.

Foreman, T.T. and M. Gordon. 1981. Patches and Structural Components For a Landscape Ecology. BioScience. Vol. 31 no. 10.

Forest Plan. (See USDA Forest Service. 1997)

Forest Plan FEIS. (See USDA Forest Service. 1997)

Forest Service. (See USDA, Forest Service).

Forman, T.T. and M. Gordon. 1986. Landscape Ecology. New York: John Wiley and Sons.

Franklin, J.F. 1990. Old growth and the new forestry. In, Proceedings of the New Perspectives Workshop: Petersburg, Alaska, July 17-19, 1990, Copenhagen, M.J., ed. USDA Forest Service, Region 10, Juneau, AK.

Fuller, T.K. 1989. Population dynamics of the wolves in North-Central Minnesota. Wildlife Monograph 105.

FSH. See USDA Forest Service Handbooks.

FSM. See USDA Forest Service Manuals.

Gabreilson, I.N. and F.C. Lincoln. 1959. The Birds of Alaska. The Stackpole Co., Harrisburg, Penn., and the Wildlife Management Institute, Washington D.C.

Goldschmidt, Walter R. and Theodore H. Haas. 1946. Possessory Rights of the Natives of Southeastern Alaska: a Detailed Analysis of the Early and Present Territory Used and Occupied by the Natives of Southeastern Alaska, Except the Natives of the Village of Kake (Partially Treated), Hydaburg, and Klawock: a Report to the Commissioner of Indian Affairs.

Graham, R.T., R.T. Reynolds, M.H. Reiser, R.L. Bassett, and D.A. Boyce. 1994. Sustaining forest habitat for the Northern Goshawk: a question of scale. Studies in Avian Biology 16:12-17.

Grubb, T.G, L.L. Pater, D.K. Delaney. 1998. Logging truck noise near nesting Northern goshawks. Research Note RMRS-RN-3, USDA Forest Service, Rocky Mountain Research Station.

Hanley, T.A. and C.L. Rose. 1987. Influence of overstory on snow depth and density in hemlock-spruce stands: Implications for management of deer habitat in Southeastern Alaska. USDA Forest Service. Res. Note PNW-RN-459, 11pp.

Hansen, A.J., T.A. Spies, F.J. Swanson, and J.L. Ohmann. 1991. Lessons from natural forests. BioScience 41:382—392.

Harmon, M.E. 1986. Logs as sites of tree regeneration in Picea sitchensis-Tsuga heterophylla forests of coastal Washington and Oregon. PhD. thesis, Oregon State University, Corvallis.

Harmon, M.E. and J.F. Franklin. 1989. Tree seedlings on logs in Picea-Tsuga forests of Oregon and Washington. Ecology 70(1):48-59.

Harr, R. Dennis. 1989. Cumulative Effects of Timber Harvest on Streamflows. Paper presented at the Technical Session on Cumulative Effects of Forest Practices, Society of American Foresters, Spokane, Washington. 24 pages.

Harr, et.al. 1975. Changes in Storm Hydrographs After Road Building and Clear-Cutting in the Oregon Coast Range. Water Resources Research,Vol. 11, No 3, pp. 436-444.

Harris, A.S. 1989. Wind in the Forests of Southeast Alaska and Guides for Reducing Damage. USDA Forest Service GTR, Pacific Northwest Research Station, PNW-GTR-244.

Harris, A.S. and W.A. Farr. 1974. Forest ecology and timber management. In, The Forest Ecosystem of Southeast Alaska. Technical Report PNW-25. Portland: USDA Forest Service. Pacific Northwest Forest and Range Experiment Station.

Harris, L.D. 1984. The fragmented forest: Island biogeography theory and the preservation of biotic diversity. Univ. of Chicago Press, Chicago.

Harris, L.D. 1985. Conservation corridors: A highway system for wildlife. Environmental Info. Center, Florida Conserv. Found., Winter Park, Florida. ENFO Rept. 855.

Hicks, B.J., R.L. Bescha, and R.D. Harr. 1991. Long-term changes in streamflow following logging in western Oregon and associated fisheries implications. Water Resource Bulletin. 27(2):217-226.

Holmberg, N.D. 1992. Letter from U.S. Fish & Wildlife Service concerning Section 7 consultation with Forest Service, March 5, 1992.

Hughes, J.H. 1985. Characteristics of standing dead trees in old-growth forests on Admiralty Island, Alaska. M.S. Thesis, Washington State University, Pullman. 103 pp.

Hunter, M.J. 1990. Wildlife, forests, and forestry: Principles of managing forests for biological diversity. Englewood Cliffs, NJ: Prentice Hall.

Iverson, G.C., G.D. Hayward, K.Titus, E. DeGayner, R.E. Lowell, D.C. Crocker-Bedford, P.F. Schempf, and J. Lindell. 1996. Conservation assessment for the Northern goshawk in southeast Alaska. General Technical Report PNW-GTR-387, USDA Forest Service, Pacific Northwest Research Station.

Jensen, W.F., T.K. Fuller, and W.L. Robinson. 1986. Wolf, Canis lupus, distribution on the Ontario-Michigan border near Saulk St. Marie. Canadian Field Naturalist.

Kemp, G.A. 1979. The Rocky Mountain working group. Pages 217-236 in D. Burk (editor). The black bear in modern North America. Boone and Crockett Club. Amwell Press, Clinton, Ny.

Kirchhoff, M.D., and S. R.G. Thompson. 1998. Effects of selective logging on deer habitat in Southeast Alaska: a retrospective study. Alaska Department of Fish and Game, Federal Aid in Wildlife Restoration Final Report. Grant W-24-4,5 and W-27-1. Juneau, Alaska.

Krosse, P.C. 1998. Wind Probability Mapping for the Luck Lake and Staney Creek Project Areas. Unpublished white paper.

Kruse, J. and R. Frazier. 1988. “Reports to the Communities of Southeast Alaska” [one per community]. Tongass Resource Use Cooperative Survey. Institute if Social and Economic Research. University of Alaska Anchorage. Ref. 3790.

Kvaalen, L. 1992. Black bears (Ursus americanus) and subsistence on Prince of Wales and surrounding islands: an overview of population and harvest levels as related to subsistence management. Unpublished report, USDA Forest Service, Craig Ranger District, Craig, Alaska.

Landers, J.L., R.J. Hamilton, A.S. Johnson, and R.L. Marchinton. 1979. Foods and habitat of black bears in southeastern North Carolina. Journal of Wildlife Management. 43:143-153.

Larson, D. 1998. Phone conversation with A. Russell, Thorne Bay Ranger District Wildlife Biologist. February.

Lawrence, W. 1979. Pacific working group: habitat management and land use practices. Pages 196-201 in D. Burk (editor). The black bear in modern North America. Boone and Crockett Club. Amwell Press, Clinton, NY.

Lindell, J.R. and E.M. Grossman. 1998. Columbia spotted frog (Rana luteiventris) distribution and local abundance in southeast Alaska. Unpublished document. US Fish and Wildlife Service, Juneau, Alaska.

Lindzey, F.G., and E.C. Meslow. 1976. Characteristics of black bear dens on Long Island, Washington. Northwest Science, 50:236-242.

Lindzey, F.G., and E.C. Meslow. 1977. Home range and habitat use by black bears in southwestern Washington. Journal of Wildlife Management, 41:413-425.

Magnuson-Stevens Fishery Conservation and Management Act of 1996.

Marine Mammal Protection Act of 1972.

McCollum, M.T. 1973. Habitat utilization and movements of black bears in southwest Oregon. M.S. Thesis. Humboldt State University, Arcata, CA. 66 pp.

McIlroy, C.W. 1972. Effects of hunting on black bears in Prince William Sound. Journal of Wildlife Management, 36:828-837.

Mech, L.D. and P.H. Karns. 1977. Role of the wolf in a deer decline in the Superior National Forest. USDA Forest Service Research Paper NC-52, North Central Forest Experiment Station, St. Paul, Minnesota.

Mech, L.D., S.H. Fritts, G.L. Radde, and W.J. Paul. 1988. Wolf distribution and road density in Minnesota. Wildlife Society Bulletin #16.

Miller, K. 1996. Description and project analysis: reconnaissance design of passenger/vehicle ferry vessels and terminals, Prince of Wales Island ferry project. Project No. 75472. Volume 1 of 3. Unpublished document. Available from the City of Craig, Craig, Alaska.

Modafferi, R.D. 1982. Black bear movements and home range study. Alaska Department of Fish and Game. Fed. Aid in Wild. Rest., Final Rep., Proj. W-17-10, W-17-11, W-21-1, and W-21-2., Job 17.2R. Juneau. 73 pp.

Multiple-use Sustained Yield Act of 1960.

Nagorsen, D.W., and R.M. Brigham. 1993. Bats: Royal British Columbia Museum Handbook. University of British Columbia Press, Victoria.

National Environmental Policy Act (NEPA) of 1969, as amended. Public Law 91-90, 42 USC 4321-4347, January 1, 1970, as amended by Public Law 94-52, July 3, 1975, and Public Law 94-83, August 9, 1975.

National Forest Management Act (NFMA). 1976. Public Law 94-588, 90 Stat. 2949, as amended; 16 U.S.C. 36 CFR 219.

National Historic Preservation Act. 1966.

Noss, R.F. 1983. A Regional Landscape Approach to Maintain Diversity. BioScience Vol. 33, pp. 700-702.

Oliver, C.D. 1981. Forest development in North America following major disturbances. Forest Ecology and Management. 3:153-168.

Oliver, C.D. and B.C. Larson. 1990. Forest Stand Dynamics. McGraw-Hill. New York.

Palmer, R. 1975. Handbook of North American Birds, Volume 3. Yale Univ. Press. London, England.

Parker, D.I., and J.A. Cook. 1996. Keen's Long-eared Bat, *Myotis keenii,* Confirmed in Southeast Alaska. The Canadian Field-Naturalist. 110:611-614.

Patric, J.H. 1966. Rainfall Interception by Mature Coniferous Forests of Southeast Alaska. Journal of Soil and Water Conservation. 21:229-231.

Paul, T. and T.B. Straugh. 1998. Deer hunter survey summary statistics. Alaska Department of Fish and Game, Division of Wildlife Conservation. Federal Aid in Wildlife Restoration Supplementary Report to the Deer Survey-Inventory Activities. 1 July 1997-30 June 1998.

Person, D. 1993. Ecology of the Alexander Archipelago Wolf and Response to Change. Progress Report No. 2. November 22, 1993.

Person, D.K., M. Kirchhoff, V. Van Ballenberghe, G.C. Iverson, and E. Grossman. 1996. The Alexander Archipelago wolf: A Conservation Assessment. USDA Forest Service, Pacific NW Research Station, General Technical Report PNW-GTR-384.

Person, D., M. Kirchhoff, V. Van Ballenberghe, and R.T. Bowyer. 1997. Letter to Beth Pendleton, September 19, 1997. Unpublished document. USDA Forest Service, Juneau, Alaska.

Ralph, C.J., G.L. Hunt Jr., M.G. Raphael and J.F. Piatt. 1995. Ecology and Conservation of the Marbled Murrelet in North America: An Overview. USDA Forest Service, Pacific SW Research Station, General Technical Report PSW-GTR-152.

Ratti, J.T. and D.E. Timm. 1979. Migratory behavior of Vancouver Canada geese: Recovery rate bias. In, Biology and Management of Pacific Flyway geese, R.L. Jarvis and J.T. Bartonek, eds., pp.208-212. Oregon State University Bookstores, Inc. Corvallis.

Reger, Douglas R. 1995. 1993 Investigations at the Coffman Cove Site, PET-067: a Preliminary Review. Alaska Department of Natural Resources, Division of Parks and Outdoor Recreation, Office of History and Archaeology Report Number 53.

Resources Planning Act (RPA). See USDA Forest Service 1974.

Reynolds, R.T. 1989. Accipiters. Pages 92-101 in B.G. Pendleton, C.E. Ruibal, D.L. Krahe, K. Steenhof, M.N. Kochert, and M.N. LeFranc, Jr., eds. Proc. Western raptor management symposium and workshop. National Wildlife Federation Science and Technology Series 12.

Reynolds R.T., R.T. Graham, M.H. Reiser, R.L. Bassett, P.L. Kennedy, D.A. Boyce, G. Goodwin, R. Smith, and E.L. Fisher. 1992. Management recommendations for the northern goshawk in the southwestern United States. General Technical Report RM-217. USDA Forest Service, Rocky Mountain Forest and Range Experiment Station, Ft. Collins, CO.

Rivers and Harbors Act of 1899. 33 U.S.C. 403.

Rogers, L.L. 1970. Black bear of Minnesota. Minn. Nat. 21:42-47.

Schoen, J.W., M.D. Kirchhoff, and J.H. Hughes. 1988. Wildlife and old-growth forests in Southeast Alaska. Natural Areas Journal 8:138-145.

Schoen, J.W., M.D. Kirchhoff, and M.H. Thomas. 1985. Seasonal distribution and habitat use by Sitka black-tailed deer in Southeastern Alaska. Fed. Aid in Wildl. Res. Final Rep. Prog. W-17-11, W-21-2, W22-2, W22-3, and W22-4. Job 2.6R, Alaska Dept. of Fish and Game, Juneau.

Schwartz, C.C. and A.W. Franzmann. 1983. Effects of tree crushing on black bear predation on moose calves. Pages 40-44 in E.C. Meslow (editor). Bears: their biology and management. Int. Conf. Bear Res. And Manage. 5.

SHPO. (See Alaska State Historic Preservation Office.)

Smith, W.P. and J.V. Nichols. 1998. What ecological correlates explain abundance and capture probability of the Prince of Wales flying squirrel (*Glaucomys sabrinus griseifrons Howell*) in old-growth habitats? Unpublished document. USDA Forest Service, Pacific Northwest Research Station, Juneau, AK.

Smith, W.P., pers. com. USDA Forest Service, Forestry Sciences Laboratory, Juneau, Alaska.

Stebbins, R.C. 1985. Western Amphibians and Reptiles. Houghton Mifflin Co., Boston, MA.

Strickland, M.A., C.W. Douglas, M. Novak, and N.P. Hunziger. 1982. Marten (Martes americana). In, Wild Mammals of North America, J.A. Chapman and G.A. Feldhamer, eds., pp. 599-612. The John Hopkins University Press. Baltimore, MD.

Suring, L.H., E.J. Degayner, R.W. Flynn, and T.M. Mccarthy. 1988. Habitat capability model for black bear in southeast Alaska. Unpublished report. USDA Forest Service, Alaska Region, Juneau, Alaska.

Suring, L.H., R.W. Flynn, E.J. Degayner. 1992b. Habitat capability model for marten in southeast Alaska: winter habitat. Version 5.0. Unpublished document. USDA Forest Service, Juneau, Alaska.

Suring, L.H., E.J. Degayner, R.W. Flynn, M.D. Kirchhoff, J.R. Martin, J.W. Shoen, L.C. Shea. 1992. Habitat capability model for Sitka black-tailed deer in Southeast Alaska: Winter habitat. USDA Forest Service, Tongass National Forest.

Teitje, W.D. and R.L. Ruff. 1980. Denning behavior of black bears in boreal forest of Alberta. Journal of Wildlife Management, 44:858-870.

Theil, R.P. 1985. Relationship between road densities and wolf habitat suitability in Wisconsin. American Wildlife Naturalist #133.

Tongass Timber Reform Act (TTRA). 1990. Public Law 101-626.23 October.

TPIT. See USDA Forest Service. 1998e.

Turek, M.F., R.F. Schroeder, and R. Wolfe. 1998. Deer hunting patterns, resource populations, and management issues on Prince of Wales Island. USDA Forest Service, R10-MB-376.

USDA Forest Service. 1974a. Forest and Rangeland Renewable Resources Planning Act.

USDA Forest Service. 1977a. Southeast Alaska area guide. USDA Forest Service, Alaska Region, Juneau, AK.

USDA Forest Service. 1982. National Forest System land and resource management planning. USDA Forest Service. Federal Register 47:43026-43092.

USDA Forest Service. 1983. Alaska Regional Guide. Alaska Region Rep. No. 126. USDA Forest Service, Alaska Region, Juneau, AK.

USDA Forest Service. 1989. 1989-94 operating period for the Ketchikan Pulp Company long-term sale area. Final Environmental Impact Statement. USDA Forest Service, Tongass National Forest, Ketchikan, AK.

USDA Forest Service. 1992a. Soil quality standards. Forest Service Manual 2500, Watershed and air management. R10 Supplement No. 2500-92-1, pg. code 2554.

USDA Forest Service. 1993. Central Prince of Wales Final Environmental Impact Statement Ketchikan Pulp Company Long-term Timber Sale Contract. USDA Forest Service, Tongass National Forest, Ketchikan, AK.

USDA Forest Service. 1993a. Archaeological Clearance Report for Central Prince of Wales EIS (VCU 571), Tongass National Forest, Ketchikan Area, Southeast Alaska. CRM Report 1993-05-01, written by P. Edmondson, K. Foster, D. Foskin, and D. Monteith. On file at the Ketchikan Area Office, Ketchikan, Alaska.

USDA Forest Service. 1993b. Archaeological Clearance Report for Central Prince of Wales EIS (VCU 572 and 573), Tongass National Forest, Ketchikan Area, Southeast Alaska. CRM Report 1993-05-01-09, written by P. Edmondson, K. Foster, D. Foskin, and D. Monteith. On file at the Ketchikan Area Office, Ketchikan, Alaska.

USDA Forest Service. 1995. Programmatic Agreement Among the United States Department of Agriculture, Forest Service, Alaska Region; the Advisory Council on Historic Preservation; and the Alaska State Historic Preservation Officer regarding National Historic Preservation Act, Section 106 Compliance in the Alaska Region of the Forest Service. United States Department of Agriculture, Agreement #95MOU-10-029.

USDA Forest Service. 1997. Tongass National Forest Land and Resource Management Plan (R10-MB-338dd, 1997), Land Management Plan Revision, Final Environmental Impact Statement (R10-MB-338b, 338c, 338e through 338h, and 338n, January 1997, and Errata, May, 1997).

USDA Forest Service. 1998. Fisheries Resources Report for the Luck Lake Project Area. Internal report for Luck Lake Project. Tongass National Forest, Ketchikan Area. Thorne Bay, Alaska.

USDA Forest Service. 1998a. Geology, Minerals, and Karst Resources Report for the Luck Lake Project Area. Internal report for Luck Lake Project. Tongass National Forest, Ketchikan Area. Thorne Bay, Alaska.

USDA Forest Service. 1998b. Scenic Quality and Recreation Effects Analysis Report for the Luck Lake Project Area. Internal report for Luck Lake Project. Tongass National Forest, Ketchikan Area. Thorne Bay, Alaska.

USDA Forest Service. 1998c. Silviculture and Timber Management Resources Report for the Luck Lake Project Area. Internal report for Luck Lake Project. Tongass National Forest, Ketchikan Area. Thorne Bay, Alaska.

USDA Forest Service. 1998d. Soil, Floodplain, Riparian, and Wetland Resources Report for the Luck Lake Project Area. Internal report for Luck Lake Project. Tongass National Forest, Ketchikan Area. Thorne Bay, Alaska.

USDA Forest Service. 1998e. Tongass National Forest Land and Resource Management Plan Implementation Policy Clarification. USDA Forest Service, Alaska Region, Juneau, AK.

USDA Forest Service. 1998f. Watershed Analysis for the Luck Lake Project Area. Internal report for Luck Lake Project. Tongass National Forest, Ketchikan Area. Thorne Bay, Alaska.

USDA Forest Service. 1998g. Wildlife Resources Report for the Luck Lake Project Area. Internal report for Luck Lake Project. Tongass National Forest, Ketchikan Area. Thorne Bay, Alaska.

USDA Forest Service. 1998h. Control Lake Timber Sales Final Environmental Impact Statement (R10-MB-369a and 369b)and Record of Decision (R10-MB-369c). USDA Forest Service, Tongass National Forest, Ketchikan, Alaska.

USDA Forest Service. 1998i. Deer hunting patterns resource populations, and management issues on Prince of Wales Island. Alaska Region R10-MB-376, written by M.F. Turek, R.F. Schroeder, R. Wolfe.

USDA Forest Service. 1999. Tongass National Forest Land and Resource Management Plan Record of Decision. FS-639. April 13, 1999. USDA Forest Service, Alaska Region, Juneau, AK.

USDA Forest Service. 1999b. Addendum to the Soil, Floodplain, Riparian, and Wetland Resources Report for the Luck Lake Project Area. Internal report for Luck Lake Project. Tongass National Forest, Ketchikan Area. Thorne Bay, Alaska.

USDA Forest Service. 2000. Addendum to the Watershed Analysis for the Luck Lake Project Area. Internal report for Luck Lake Project. Tongass National Forest, Ketchikan Area. Thorne Bay, Alaska.

USDA Forest Service Manuals (FSM)

Title 2400, *Timber Management*
Title 2500, *Watershed and Air Management, Chapter 2554 "Soil Quality Monitoring"*

USDA Forest Service Handbooks

FSH 1909.15 *Environmental Policies and Procedures Handbook*
FSH 2409.18. *Timber Sale Preparation Handbook and R10 Supplement 6*
FSH 2409.18-92-5. *Region 10 Supplement to Timber Sale Preparation Handbook. Proportionality Analysis.*
FSH 2409.24. *Timber Sales Preparation Handbook.*
FSH 2509.18. *Soil Management Handbook and R10 Supplement 7.*
FSH 2509.22. *Soil and Water Conservation Handbook.*

U.S. Office of the President. Executive Order 11593. Cultural.

U.S. Office of the President. 1977. Executive Order 11988. Floodplain Management.

U.S. Office of the President. Executive Order 11990. Wetlands. 42 USC 4321 et seq.

U.S. Office of the President. Executive Order 12898. Environmental Justice.

U.S. Office of the President. Executive Order 12962. Aquatic Systems and Recreational Fisheries.

Van Ballenberghe, V., A.W. Erickson, and D. Byman. 1975. Ecology of the Timber Wolf in Northeastern Minnesota. Wildlife Monograph #43.

van Zyll de Jong. C.G. 1985. Handbook of Canadian mammals, Volume 2: bats. National Museum of Natural Science, National Museum of Canada, Ottawa.

van Zyll de Jong, C.G., and D.W. Nagorsen. 1994. A review of the distribution and taxonomy of *Myotis keenii* and *Myotis evotis* in British Columbia and adjacent United States. Canadian Journal of Zoology. 72:1069-1078.

Wagner, W.H. 1993. Flora of North America, Volume 2. Flora of North America Editorial Committee. Oxford University Press.

Waters, Dana L. 1992. Habitat associations, phenology, and biogeography of amphibians in the Stikine River Basin and Southeast Alaska. Report of the 1991 pilot project. US Fish and Wildlife Service and California Cooperative Fisheries Research Unit, Humboldt State University, Arcata, CA.

White, W.B., D.C. Culver, J.S. Herman, T.C. Kane, J.E. Mylroie. 1995. Karst Lands, American Scientist, volume 83. pp. 450-459.

Widen, P. 1989. The hunting habitats of Goshawks (*Accipiter gentilis*) in boreal forests of central Sweden. Ibis. 131:205-231.

Wild and Scenic Rivers Act of 1968, amended 1986.

Wood, R. 1990. Annual survey and inventory report—wolf. Federal aid in wildlife restoration. Alaska Department of Fish and Game, Juneau, AK.

Yeo J.J. and J.M. Peek. 1992. Habitat selection by female Sitka black-tailed deer in logged forests of Southeast Alaska. Journal of Wildlife Management. 56(2): 253-261.

Distribution List

A copy of the Luck Lake Final EIS and Record of Decision was sent to the following agencies, individuals, organizations, businesses, public officials, cities, and IRA tribes. These parties either requested a copy of the Summary and/or EIS during the scoping process, requested a copy of the EIS at some other time in the NEPA process, are part of the Forest Service's mandatory mailing list (Forest Service Handbook 1909.15, Sections 23.2 and 63.1), or are recognized cities or IRA tribes potentially affected by, or interested in, the Luck Lake project. The Summary for the Luck Lake EIS was not printed as a separate document, so anyone requesting a Summary was sent the entire document.

Agencies

Advisory Council on Historic Preservation, Office of Program Review and Education.
Alaska Department of Fish and Game.
Alaska Department of Natural Resources Division of Forestry.
Alaska Department of Transportation.
Alaska Board of Fisheries.
Alaska Department of Environmental Conservation.
Alaska Division of Government Coordination.
Alaska Office of the Governor, Alaska Land Use Council.
Department of the Army, U.S. Army Corps of Engineers, Regulatory Branch.
Department of the Army, U.S. Army Engineer District, Alaska.
Department of the Army, U.S. Army Engineer Division.
Federal Aviation Administration.
Federal Highway Administration.
Interstate Commerce Commission.
National Marine Fisheries Service.
NOAA Policy and Strategic Planning Office.
U.S. Coast Guard, Marine Environment and Protection Division.
U.S. Department of Energy, Office of Environmental Compliance.
U.S. Department of Housing and Urban Development.
U.S. Department of Transportation.
U.S. Environmental Protection Agency, EIS Review Coordinator.
U.S. Environmental Protection Agency, Office of Federal Activities.
U.S. Fish and Wildlife Service.
U.S. Naval Observatory, Naval Oceanography Division.
U.S. Navy, Environmental Protection Division.
USDA Forest Service, Alaska Region.
USDA Forest Service, Chugach N.F.
USDA Forest Service, Superior N.F., Tofte Ranger District.
USDA Forest Service, Tongass N.F., Craig Ranger District.
USDA Forest Service, Tongass N.F., Hoonah Ranger District.
USDA Forest Service, Tongass N.F., Juneau Ranger District.
USDA Forest Service, Tongass N.F., Ketchikan Office.
USDA Forest Service, Tongass N.F., Ketchikan-Misty Ranger District.
USDA Forest Service, Tongass N.F., Petersburg Office.
USDA Forest Service, Tongass N.F., Petersburg Ranger District.
USDA Forest Service, Tongass N.F., Sitka Office.
USDA Forest Service, Tongass N.F., Sitka Ranger District.
USDA Forest Service, Tongass N.F., Thorne Bay Ranger District.
USDA Forest Service, Tongass N.F., Wrangell Ranger District.
USDA Forest Service, Tongass N.F., Yakutat Ranger District.
USDA Forest Service, Washington Office.
USDA National Agricultural Library.
USDA Office of Equal Opportunity.
USDA Natural Resource Conservation Service.
USDA, APHIS.
USDA, OPA Publications Stockroom.
USDI, Office of Environmental Policy and Compliance.

Media

Ketchikan Daily News.

Organizations and Businesses

Alaska Board of Fisheries.
Alaska Co-op Extension.
Alaska Forest Association.
Basic Transportation Company.
Cape Fox Corporation
Cascadia Wildlands Project.
Colorado State University
Craig Advisory Committee.
Dames and Moore.
Earthjustice Legal Defense Fund.
Forest Conservation Council.
Forest Guardians.
Greater Prince of Wales Chamber of Commerce.
Greenpeace, Alaska Forests Campaign.
Haida Corporation.
Harza Engineering.
Kavilco, Inc.
Ketchikan Pulp Company.
Klawock Heenya Corporation.
Montana State University.
Natural Resource Defense Council.
Northwestern University.
Prince of Wales Conservation League.
Sealaska Corporation.
Shaan-Seet, Inc.
Sitka Conservation Society.
Southeast Alaska Conservation Council.
Thorne Bay Company.

Individuals

Anne Archie
Tony and Pat Baskett
Chuck Bateman
Mike Brown
Jo Chatham
John Clifton
Steve and Carol Connelly
Larry Edwards
David Faast
Mike Farley
Tom Ford
Blain A. Garrett
Jeffrey Hermanns
William Hollywood, IV
Barbara Huffman
Ron Hull
Jerry Kilanowski
Chris Lee
Steve Lewis
Joseph Mathis
Richard Myren
Richard Reeves
Mike Shafer
Pete Smith
David Spigai
Steve Warren
Bruce White

Public Officials, Cities, and IRA Tribes

Alaska State Representative, Albert Kookesh.
Angoon Community Association.
Central Council, Tlingit and Haida Indian Tribes of Alaska.
Chilkat Indian Village (Klukwan).
Chilkoot Indian Association.
City of Coffman Cove.
City of Craig.
City of Hydaburg.
City of Kasaan.
City of Ketchikan.
City of Klawock.
City of Thorne Bay.
Craig Community Association
Douglas Indian Association.
Edna Bay Community
Hoonah Indian Association.
Hydaburg Cooperative Association
Ketchikan Gateway Borough
Ketchikan Indian Corporation
Klawock Cooperative Association
Klawock Tribal Government.
Metlakata Indian Community
Native Village of Kasaan
Organized Village of Kake.
Organized Village of Saxman
Petersburg Indian Association.
Point Baker Community Council
Port Protection Community Association
Sitka Tribe of Alaska.
Tongass Tribe.
United States Representative, Don Young
United States Senator, Frank Murkowski
United States Senator, Ted Stevens
Wrangell Cooperative Association.
Yakutat Tlingit Tribe.

Index

W

Appendix A

Reasons for Scheduling the Environmental Analysis of the Luck Lake Project Area

Appendix A
Reasons for Scheduling the Environmental Analysis of Luck Lake Project Area

This Appendix provides a detailed explanation of the rationale for a specific timber sale project and its importance to the multi-year timber program on the Tongass National Forest. To accomplish this, the following questions are answered:

Why is Timber from the Tongass National Forest Being Offered for Sale?
What Steps Must Be Completed to Prepare a Sale for Offer?
How does the Forest Service Develop Expectations about the Market Demand for Timber?
How does the Forest Service Maintain an Orderly and Predictable Timber Sale Program?
How Does the Forest Service Decide Where Timber Sale Projects Should be Located?
How Does This Project Fit into the Tongass Timber Program?
Why Can't This Project Be Located Somewhere Else?

Coordinated timber sale planning is essential for meeting the goals of the Tongass Land Management Plan and to provide an orderly flow of timber to local industry. To determine the volume of timber to offer each year, the Forest Service can look to current market conditions and the level of industry operations. However, the lengthy planning process—of which this document is a part—requires the Forest Service to rely on projections of future harvest levels to decide how many timber sale projects to begin each year. This document explains how the Forest Service uses information about future markets and past experience with the logistics of timber sale planning to determine the volume of timber that needs to be started through this process each year. Using a detailed timber sale schedule that provides information about each sale as it moves through each stage of the planning process, this Appendix explains the rationale and the necessity for completing this particular timber sale project at this point in time.

Why is Timber from the Tongass National Forest Being Offered for Sale?

National Legislation

On a national level, the legislative record is very clear about the role of the timber program in the multiple-use mandate of the National Forests. The Organic Act of 1897, 16 USC 473-481 (partially repealed in 1976) directed the agency to manage the forests in order to "improve and protect the forest ... [and] for the purpose of securing favorable conditions of water flows, and to *furnish a continuous supply of timber* for the use and necessities of the citizens of the United States" (emphasis added.) The Multiple-Use Sustained Yield Act of 1960, 16 U.S.C. 528-531, directs the Forest Service to administer federal lands for "outdoor recreation, range, timber, watershed, and wildlife and fish purposes."

The National Forest Management Act of 1976 (16 U.S.C. 472a) states that "the Secretary of Agriculture...[may sell , at not less than appraised value, trees, portions of trees, or forest products located on National Forest System Lands." Although the heart of the Act is land management planning, the Act also sets policy direction for timber management and public participation in Forest Service decision making. Under NFMA, the Forest Service was

directed to "limit the sale of timber from each national forest to a quantity equal to or less than a quantity which can be removed from such forest annually in perpetuity on a sustained-yield basis" (16 U.S.C. 1611)

The NFMA directed the Forest Service to complete land management plans for all units of the National
Forest System. Forest Plans were to be developed by an interdisciplinary team to provide for the coordination of outdoor recreation, range, timber, watershed, wildlife and fish, and wilderness. The 1979 Tongass National Forest Land and Resource Management Plan was the first to be completed. A revised Forest Plan was issued in 1997. With regard to timber production, the Record of Decision for the 1997 Plan stated:

> The Tongass National Forest will continue to allow timber harvest while maintaining sustained yield and multiple use goals...Although the maximum amount of timber that could be harvested during the first decade of the Revised Plan implementation is an average of 267 MMBF per year, a level of 200 MMBF or less is more likely to be offered over the next few years, given current market conditions and the transition that both the timber industry and the Forest Service is experiencing. Therefore the public can expect the amount of timber to be offered annually to vary between 200 MMBF or less and 267 MMBF.
>
> ...The timber resource will be managed for production of sawtimber and other wood products from timberlands available for sustainable timber harvest, on an even-flow, sustained-yield basis and in an economically efficient manner. We will seek to provide a timber supply sufficient to meet the annual market demand for Tongass National Forest timber and the market demand for the planning cycle...

In April 1999, Under Secretary Jim Lyons elected to modify the 1997 Plan and issue a new Record of Decision (ROD). As stated in the 1999 ROD:

> The Tongass National Forest will continue timber harvest consistent with sustained yield and multiple use goals. The forest-wide standards and guidelines for timber include general direction to "[ensure that silvicultural systems other than clearcutting are considered through an appropriate project level analysis process. However, uneven-aged management systems will be limited to areas where yarding equipment suited to selective logging can be used"...
>
> Forest-wide, considering all land allocations where timber harvest is permitted, it is estimated that 65 percent of harvesting will involve clearcutting, with the remaining 35 percent utilizing other methods.
>
> ...the ASQ for the next 10 years on the Tongass is reduced from an estimated average annual level of 267 MMBF in the 1997 ROD to 187 MMBF in the 1999 ROD, considering both NIC I and NIC II. Although initially this would seem to be a significant reduction in the ASQ, this ceiling for timber harvests from the Tongass remains

> sufficient to meet all but the most optimistic projections for timber demand and harvests from the Forest for the next decade. I believe that the additional environmental and multiple use benefits provided by this decision should not result in negative social and economic impacts based upon the most current demand for timber.

In day to day operation of the Tongass timber program, the Forest Service attempts to strike a balance among timber availability as documented in the Forest Plan, the market demand for timber in Southeast Alaska, the needs and desires of other forest users, and funding allocations made by Congress.

Alaska-Specific Legislation

Legislation unique to Alaska also directs the Forest Service to maintain a commercial timber program. The Alaska National Interest Lands Conservation Act (ANILCA; P.L. 96-487, 1980) and the Tongass Timber Reform Act (TTRA; P.L. 101-625, 1990) speak directly to the issue of Tongass timber supply.
Section 705(a) of ANILCA directed the Forest Service to maintain a timber supply from the Tongass at a rate of four billion five hundred million board feet per decade. To ensure that the timber target was met, Congress provided for a $40 million annual earmark to fund pre-roading, cultural treatments and innovated logging systems.

Section 101 of TTRA repealed the timber supply mandate and fixed appropriations of ANILCA and replaced them with the following more general direction:

> Sec. 705. (a), Subject to appropriations, other applicable law, and the requirements of the National Forest Management Act (P.L. 94-588); except as provided in subsection 9d) of this section, the Secretary shall, to the extent consistent with providing for the multiple use and sustained yield of all renewable forest resources, seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the annual market demand from such forest for each planning cycle.

Timber from the Tongass National Forest is being offered as part of the multiple use mission of the Forest Service as identified in public laws. Alaska-specific legislation and the Forest Plan directs the Forest Service to seek to provide timber to meet market demand subject to appropriations and balancing of forest uses.

What Steps Must Be Completed to Prepare a Sale for Offer?

The timber sale program is complex. A number of projects are underway at any given point in time, each of which may be in a different stage of planning and preparation. A system of checkpoints, or "gates", helps the Forest Service track the significant milestones of each project from inception to contract termination, followed by monitoring, reforestation, and timber stand improvement. Each project passes through all of the following gates, with the complexity of the sale determining the complexity of the final product at each stage.

Gate 1: Completion of Position Statement. The Position Statement is a brief analysis of the project area with the intent of determining the feasibility of the potential timber sale. This is the first step in the timber sale planning process and it is usually completed from seven to ten years before a sale is offered. After the Position Statement is developed, the Forest Service decides whether to continue to the next phase of the project where a significant investment in time and money will be made.

Gate 2: Sale Area Design, Environmental Documentation and Decision. This phase of the project is commonly referred to as the "NEPA" phase and includes inventory, public scoping, analysis, draft disclosure of the effects of the project on the environment, public comment, final analysis and disclosure, decision, potential appeal, and litigation. Gate 2 activities are generally completed two to six years before a sale is offered. The end product of this phase, an environmental decision document, forms the starting point for the next phase.

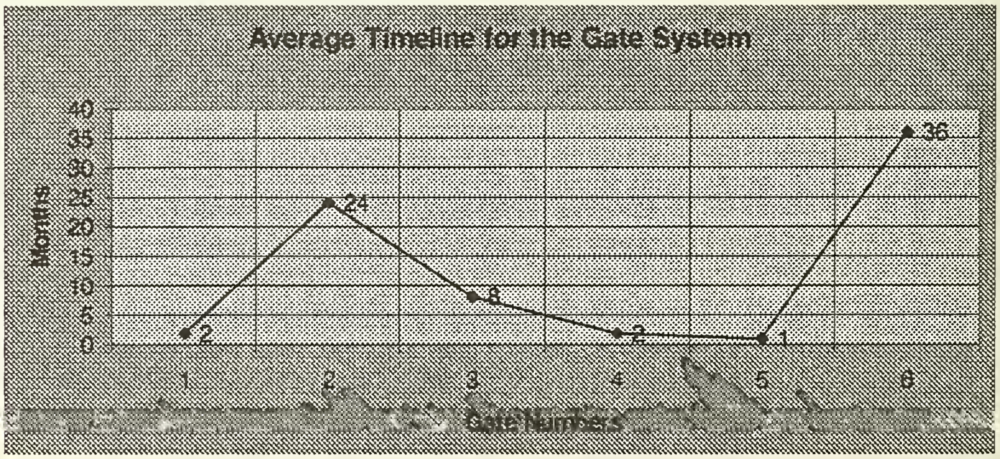
Gate 3: Plan Implementation and Field Layout. Gate 3 activities are typically completed one to three years before a sale is offered. During this phase, the information and direction included in the decision document (Gate 2) is used to designate the actual project on the ground. Additional site-specific information is collected at this time.

Gate 4: Appraisal Offering Package. The costs and value associated with the timber sale designed in Gate 3 are computed and packaged in a timber sale contract. The contract tells the prospective timber sale purchaser how the sale must be harvested to be in conformance to the project decision document. This phase of the Gate system occurs during the final year of the project development and culminates with the advertisement of the project for sale.

Gate 5: Bid Opening. Gate 5 is completed with the opening of bids for the project. If a bid is submitted, contractual provisions govern when the award of the sale takes place and when the sale will be completed and how timber removal is to occur.

Gate 6: Award. Gate 6 is the formal designation of a contract between a bidder and the Forest Service

Figure 1.



How does the Forest Service Develop Expectations about Future Timber Markets?

The Tongass National Forest makes two determinations on volume to be offered. The first is a determination on volume to be offered for the current year (annual market demand). The annual market demand is analogous to assessing industry performance in the short-term. In the short-run a firm will make use of its existing equipment to maximize profits or minimize losses. The general approach is to consider the timber requirements of the region's sawmills at different levels of operation and under different assumptions about market conditions and technical processing capability. These assumptions provide a basis for estimating the volume of timber likely to be processed by the industry as a whole in any given year. Timber inventory requirements are acknowledged and estimated in a related calculation. The volume of timber likely to be purchased is equal to the volume needed to make up any inventory shortfall in addition to the volume likely to be harvested in the coming year. The document titled *Evaluating the Demand for Tongass Timber* (USDA, Forest Service, R-10; Morse; September 28, 1998) forms the basis for how these estimates are developed. The document titled *Tongass Timber Sale Procedures* (USDA, Forest Service, R-10; Morse, Draft August 30, 1999) documents actual estimates for the current year. This estimate is what the Tongass plans to offer for the current year of the Ten Year Timber Sale Schedule pending sufficient funding to do so.

Based on the analysis documented in *Tongass Timber Sale Procedures*, for Fiscal Year 2000, the Tongass National Forest plans to offer approximately 148 MMBF for sale. The sales planned for offer will be a combination of new, previously offered, or previously offered and reconfigured. Both standing timber and salvage will be components of the program. Offerings will consist of those targeted for Small Business qualified firms as well as a portion of the volume being made available for the open market.

Life of the Forest Plan (Market Demand over the Planning Cycle)

Given the long time involved in preparing a timber sale, the proposed timber sales in this document may not be harvested for 3 to 4 years or longer, not including appeals or litigation. The Forest Service needs some idea of what the long run timber demand will be given cycles in the market. On average what should the Forest Service plan for offer, given that timber from this NEPA document may not be harvested for 4 years into the future? The Forest Service needs to take a long-run view for planning purposes. To answer these questions the Forest Service asked the Pacific Northwest Research Station for professional assistance.

As the Tongass Land Management Plan was being revised in 1997, research economists at the Pacific Northwest Research Station (PNW) were asked to update their earlier projections of Alaska timber products output and timber harvest by ownership. The most recent projections of timber harvest over the planning cycle account for several dramatic changes in the region's manufacturing capabilities, increased competition from a number of sources, and the steady erosion of North America's share of Japanese timber markets.

The Tongass documents these projections and the means of implementation through the issuance of a Ten Year Timber Sale Schedule. Each year this plan is updated whereby the current year is dropped at the culmination of the fiscal year and a new year ten is added. The basis for this schedule is long range timber market projections documented in the publication titled *Timber Products Output and Timber Harvest in Alaska: Projections for FY97-10* (Brooks and Haynes; PNW-GTR-409, September, 1997). These projections of

Alaska timber products output, the derived demand for raw material, and timber harvest by owner are developed from a trend-based analysis. These projections reflect the consequences of recent changes in the Alaska forest sector and long-term trends in markets for Alaska products. With the closure of the two southeast Alaska pulp mills, demand for Alaska National Forest timber now depends on markets for sawn wood and the ability to export manufacturing residues and lower grade logs. Three alternative projections are used to display a range of possible future demand (Table 1). Areas of uncertainty include the prospect of continuing changes in markets and in conditions faced by competitors and the speed and magnitude in investment in manufacturing in Alaska.

Demand projections are important for program planning. They provide important guidance to the Forest Service for requesting budgets, for making decisions about workforce and facilities, and for indicating the need to begin new NEPA analysis for future program offerings. They also provide a basis for expectations regarding future harvest, and thus provide an important source of information for establishing the schedule of probable future sale offerings. The weight given to the projections will vary depending on a number of factors, such as how recently they were done, and how well they appear to have accounted for recent, site-specific events in the timber

Table 1-Projected National Forest Harvest

For Fiscal Year 2001-2009, the Tongass National Forest plans to schedule approximately 160 MMBF for sale each year over the life of the Forest Plan. This schedule is based on the projections documented in *Timber Products Output and Timber Harvest in Alaska: Projections for FY97-10* (Brooks and Haynes; PNW-GTR-409, September, 1997), and current volumes in the timber sale pipeline process. Prior to the beginning of Fiscal Year 2001 the amount of volume scheduled in outyears will once again be analyzed to determine if projections made now meet the anticipated needs in the future.

Fiscal	Projected Harvest (MMBF)		
Year	Low	Medium	High
2000	95.5	116.6	142.7
2001	104.6	129.0	157.7
2002	113.7	134.9	173.1
2003	122.8	140.8	188.9
2004	131.9	146.5	205.0
2005	131.9	152.2	221.4
2006	131.9	157.8	238.2
2007	132.0	163.4	255.3
2008	132.0	168.9	272.8
2009	132.1	174.3	290.7
Average	122.8	148.4	214.6
Mean		168.7	

How does the Forest Service Maintain an Orderly and Predictable Timber Sale Program?

<u>Pools of Timber (Pipeline Volume)</u>

As discussed earlier, the Forest Service tracks accomplishment of various stages of development of each timber sale with the Gate System process. From a timber sale program standpoint, it is also necessary to track and manage multiple projects through time as projects collectively move through the Gate System. Tracking of the multiple projects can be likened to following various segments of several projects through a pipeline of time. Because of the relatively long timeframes needed to accomplish a given timber sale and the complexities inherent in timber sale project and program development, it is necessary to

track various timber sale program volumes from Gate 1 through Gate 6. Gate 1 volume represents a large pool of program volume, but represents a relatively low investment from project to project. This relative investment level offers the timber program manager a higher degree of flexibility and thus, does not greatly influence the flow of volume through the pipeline. In addition, tracking of how much volume near the end of the pipeline that is in appeals or litigation may be necessary to determine potential effects on the flow of potential timber sales.

The goal of the Tongass National Forest is to provide an even flow of timber sale offerings on a sustained yield basis. In past years, this has been difficult to accomplish due to continual reductions in the suitable timber land base, reductions in the timber industry processing capabilities, rapid market fluctuations and Forest Plan modifications and litigation. To achieve an even flow of timber sale offerings, 'pools' of projects in various stages of the Gate System will be maintained so volume offered can be balanced against current year demand and market cycle projections. Today, upward trends in demand are reacted to by moving outyear timber projects forward leaving outyears not capable of meeting the needs of the industry. In other instances, a number of new projects are started based on today's market but not available for a number of years. By the time the added projects are ready for offer, the market and demand for this volume has changed. Three pools are being tracked to achieve an even flow of timber sale offerings:

1. **Timber volume under analysis (Gate 2)**: Timber volume under analysis contains sales being. analyzed and undergoing public comment through the NEPA process. This process can often take from one to five years and reaches a significant milestone when a NEPA decision is made. This pool includes any project with a formal Notice of Intent through those with a decision document issued. Volume in appeals and litigation will be tracked as a subset of this pool as necessary.

2. **Timber volume available for sale (Gate 3, Gate 4 and Gate 5)**: Timber volume available for sales contains sales for which environmental analysis has been completed, and administrative appeals, and litigation (if any) have been resolved. They have also been fully prepared, and are available to managers to schedule for sale offerings. Managers need to maintain enough volume in this pool to be able to schedule future sale offerings in an orderly manner of the size and configuration that best meets the need of the public. As a matter of policy, and sound business practice, the Forest Service attempts to announce probable future sale offerings at least one year in advance. This allows potential purchasers an opportunity to do their own evaluations of these offerings in order to determine whether to bid, and if so, at what level.

3. **Timber volume under contract (Gate 6)**: Timber volume under contract contains sales that have been sold with a contract awarded to a purchaser, but have not yet been fully harvested. Timber contracts typically, but not always, give the purchaser three years to harvest and remove the timber purchased. Long standing Forest Service practice is to attempt to maintain about two to three years of unharvested timber volume under contract to timber purchasers. This volume of timber is the industry's dependable timber supply, which allows immediate flexibility in business decision. This practice is not limited to the Alaska Region, but is particularly pertinent to Alaska because of the nature of the land base. The relative absence of roads, the island geography,

> the steep terrain, and the consequent isolation of much of the timber land means that timber purchasers need longer-than-average lead times to plan operations, stage equipment, set up camps, and construct roads prior to beginning harvest.

What drives the various timber sale program pipeline pool volume is a combination of actual harvest and projected demand. As purchasers harvest timber, they deplete the volume under contract. Managers track harvest, and offer sales that give the industry as a whole the opportunity to replace this volume and build or maintain their working inventory. Although there can be significant variation for practical reasons from year to year, in the long-run, over both the high points and low points of the market cycle, timber harvest will equal timber sales.

The Forest Service determines the amount of pipeline volume in each of the pools, based on historical patterns. Table 2 - Pools Matrix displays what volume levels are expected to be maintained in each pool. Pool 1-Timber Volume Under Analysis is expected to be maintained at approximately 4.5 times the amount of anticipated harvest; Pool 2-Timber Volume Available for Sale is expected to be maintained at approximately 1.3 times the amount of anticipated harvest, and Pool 3-Volume Under Contract is expected to be maintained at approximately 3 times the amount of anticipated harvest. The objective of the pools concept is to maintain sufficient volume in preparation and under contract to be able to respond to yearly fluctuations in a timely manner.

Table 2- Pipeline Pool Matrix

Pipeline Pool Volume	Flows	Start of Year One	During Year One	End of Year One
1. Volume Under Analysis (Gate 2)		238	401	230
	NEPA Decision	126	343	171
2. Volume Available for Sale (Gate 3, Gate 4 and Gate 5)		79	266	159
	Offered		163	
	Sold		148	
3. Volume Under Contract (Gate 6)		325		352
	Volume Harvested*		121	

*Note-The amount of volume estimated to be harvested for the year sets the basis for what will be maintained in Pools 1-3 (Gates 2 through 6). Should this estimate be incorrect, adjustments can be made in the following years without significant departures in outyear programs capabilities.

Matrix crosswalk between Gate Tracking System and Pools of Timber Concept:
Gate 2: Proposed timber volume with a published decision document (Record of Decision) that is viable for sale after completion of appeals and litigation.
Gate 3: NEPA cleared timber volume with field preparation work completed and the timber sale ready to be offered in a timber sale contract package.
Gate 6: Timber volume under contract.

Timber volume in appeals and/or enjoined in litigation * 0 Million Board Feet

*As of 09/30/99. The volume in appeals and or enjoined in litigation is updated on a quarterly basis.

How Does the Forest Service Decide Where Timber Sale Projects Should be Located?

The Allowable Sale Quantity (ASQ)

The Modified 1997 Forest Plan Record of Decision established an ASQ for timber at 1.87 billion board feet per decade, which equates to an annual average of 187 million board feet (MMBF). The ASQ serves as an upper limit on the amount of timber that may be offered for sale as part of the regularly scheduled timber sale program. It consists of two separate Non-Interchangeable Components (NIC's) called NIC I, which is 1.53 billion board feet of timber per decade, and NIC II, which is .34 billion board feet per decade. The purposes of partitioning the ASQ into two components are to maintain the economic sustainability of the timber resource by preventing the over-harvest of the best operable ground, and to identify

that portion of the timber supply that is at risk of attainment because of marginal economic conditions. The NIC I component includes lands that can be harvested with normal logging systems. The NIC II component includes land that has high logging costs due to isolation or special equipment requirements. Most of these NIC II lands are presently considered economically and technically marginal.

Immediately following the issuance of the Modified 1997 Forest Plan Record of Decision by the Deputy Under Secretary of Agriculture James Lyons, the Forest Service began an analysis of the ROD to develop consistent methodologies for its implementation (Implementation of Tongass Land Management Plan, 1920/1950, James A. Bartelme, Forest Supervisor, May 11, 1999). The purpose of the analysis was to develop methodology to ensure the modified Forest Plan changes received a consistent implementation approach across the Tongass, and to determine where the land base existed to begin programming current and future timber sale projects.

The Tongass National Forest has been unified under one Forest Supervisor overseeing the three combined Administrative Areas (Chatham, Stikine and Ketchikan). The allowable sale quantity is disaggregated by Ranger District offices for planning and scheduling purposes. Each District has been allocated a portion of the timber harvest program based on the FORPLAN computer run and availability of suitable and available acres, to implement the Forest Plan, and Section 101 of the Tongass Timber Reform Act (1990). The Forest Plan set the Forest allowable sale quantity (ASQ) upper limit at 187 MMBF per year. The distribution of the planned ASQ harvest among the Districts is listed in Table 3 (All volumes are identified as sawlog plus utility):

Table 3-Distribution of ASQ Among the Tongass National Forest Ranger Districts

Historically, timber harvest activities were generally concentrated in the central and southern portions of the Tongass. Now, under the Modified 1997 Forest Plan, the suitable timber land base is more evenly distributed across the Forest. As a result, it is necessary to lessen harvest on the southern end and begin planning projects in areas further north. In answer to the question presented for this section of the Appendix, the suitable timber base is capable of producing the ASQ documented in the Modified 1997 Forest Plan Record of Decision. However, harvest activities will be more evenly distributed than they were in the past.

Tongass NF Ranger District	Non-Interchangeable Components	
	NIC I	NIC II
Ketchikan	18	4
Thorne Bay	21	5
Craig	18	4
Wrangell	24	4
Petersburg	37	8
Sitka	12	3
Hoonah	6	2
Juneau	12	3
Yakutat	5	1
Admiralty	0	0
NIC Totals	153	34
ASQ Total	187	

Chart 1- 1997 Modified Forest Plan Land Allocations

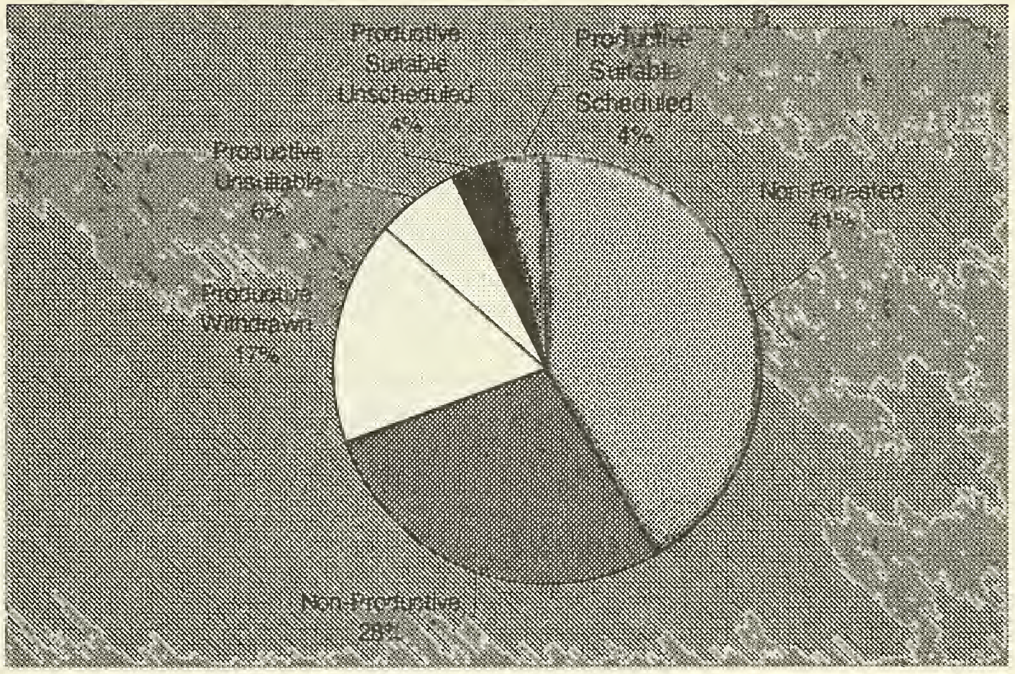


Chart 1- 1997 Modified Forest Plan Land Allocations depicts the productive suitable land base that is scheduled for timber harvest activities. Four percent of the Tongass land base generates the allowable sale quantity of 187 MMBF per year. The remainder of the land, approximately ninety-six percent, does not allow or will not support timber harvest activities.

District-Level Planning

The Forest Supervisor for the Tongass National Forest has discrete responsibilities for the overall management of the Forest's timber sale program. Included within these responsibilities is making the determination on the amount of timber volume to be made available to the industry as described above. Once a determination is made for the current year (annual demand) offer level, the information is presented to Congress via the Regional Forester and Chief of the Forest Service. Whether or not funding is appropriated to attain the program is the responsibility of the Congress and the President of the United States.

While the debate on funding takes place, the Tongass Forest Supervisor directs the District Rangers to formulate timber sale schedules that attain the prescribed offer level for the current year as well as develop outyear timber programs based on projected market demand for the planning cycle. It is the Ranger's role to recommend to the Forest Supervisor timber sale projects that meet forest plan goals and objectives. Districts work on various projects simultaneously resulting in continual movement of projects through the stages of the timber program pipeline. Their schedule allows the necessary time to complete preliminary analysis, resource inventories, environmental documentation, field layout preparations and permit acquisition, appraisal of timber resource values, advertisement of sale characteristics for potential bidders, bid opening, and physical award of the timber sale. Once all of the

Rangers' recommendations are made and compiled into a consolidated schedule, the Forest Supervisor is responsible for the review and approval of the final plan.

Pending Congressional appropriations, the sale schedule is implemented. In the event insufficient funds are appropriated to achieve the desired outputs, timber sale projects are selected and implemented on a priority basis. Generally, the higher priority projects include sales where investments such as, road networks, camps or log transfer facilities have already been established. Those sales that are not implemented or only partially implemented are moved to the outyears. The sale schedule becomes very dynamic in nature due to the number of influences on each of the districts. A formal review of the schedule is done annually by the Forest Supervisor in consultation with the District Rangers, and amendments are made as needed through the course of the year. (The Tongass Timber Sale Plan is located on the Tongass National Forest Website)

The National Forest Management Act requires the Forest Service to develop timber sale schedules that encompass the life of the forest plan. The recent Tongass National Forest planning process culminated upon issuance of the Modified 1997 Forest Plan Record of Decision for the Tongass Land and Resource Management Plan. In response to this Plan, the Tongass has prepared a Ten Year Timber Sale Schedule for Fiscal Years 2000-2009. Fiscal Year 2000 offer level is based on annual market demand estimates. The remaining years, 2001-2009 are based on market demand projections over the planning cycle. Table 4-Tongass Ten Year Timber Sale Schedule-Fiscal Year 2000, denotes the first year of the ten-year plan. Fiscal Year 2000 is listed below to show the reader an example of the information available and display the timber sales scheduled for the current fiscal year.

Table 4-Tongass Ten Year Timber Sale Schedule-Fiscal Year 2000

NEPA Project	Decision Date	RD	S+U (MMBF)	Sale Name	Vol S+U (MMBF)	Class	FY00 Gate 2	FY00 Gate 3	FY00 Gate 5
Sea Level EIS	May-99	KRD		Madder		S			26
Sea Level EIS	x	KRD		Buckdance		S			11
Sea Level EIS	x	KRD		Orion		S			13
Craig Small Sales EA	x	CRD	1.5	Craig Small Sales		S	1.5	1.5	1.5
TNB Small Sales EA	x	TNB	5	Various		S	5	5	5
Luck Lake EIS	Jun-00	TNB	13	Luck Lake		S	13	5	5
Luck Lake EIS	x	TNB		Twin Bridge		S		8	8
Couverdan CE	Jun-00	JRD	0.8	Couverden Salvage		S	0.8	0.8	0.8
8-FATHOM EIS	Apr-96	HRD		Midway		S		6.4	6.4
HRD Small Sales EA	x	HRD	0.2	Small sales		S	0.2	0.2	0.2
NW BARANOF EIS	Feb-96	SRD		Schultz		S		1	8
Woodpecker EIS	(May-00)	PRD	(5-18)	Woodwork		S	18	1	1
Twin Creek EA	Aug-98	PRD		Twin Creek heli (41,66)		S		1.5	1.5
Twin Creek EA	Aug-98	PRD		Twin Creek 15		S		0.1	0.1
South Lindenberg EIS	Dec-96	PRD		South Central (U140)		S		1.5	1.5
South Lindenberg EIS	Dec-96	PRD		S.Lindy SE		S		10	10
East Fork EA	Jul-88	PRD		East Fork		S		2	2
Bohemia Mountain EIS	Jun-95	PRD		Goose (Unit 538)		S		1	1
Doughnut EA	Jun-00	WRD	8	Doughnut		O	8	4	4
Skipping Cow EIS (X)	May-00	WRD	20	Skipping Cow		S	20	20	20
Kuakan EIS	Mar-00	WRD	12	Kuakan		S	12	12	12
Total			40				40	81.2	138.2

NOTE: The difference between projected volume (148 MMBF) and offer volume (138 MMBF) will be made up from re-offer/reconfigured unsold FY 98/99 timber sales.

The Ten Year Schedule provides a significant amount of information and is described as follows:

Title	Description
NEPA Project	Environmental document project name. This name may or may not differ from the timber sale project name depending on how many sales originate from the original NEPA document.
Decision Date	The date of the decision document whether planned or actual. 'x' denotes project has started and completion is within the FY noted under column H.
RD	Ranger district office project is located (PRD=Petersburg Ranger District).
S+U (MMBF)	Anticipated timber volume (sawlog plus utility) expected from the NEPA document. Generally only appears once in the year the decision is made. If no volume shown, decision on document was made in another fiscal year.
Sale Name	Timber sale project name.
Vol S+U (MMBF)	Timber sale project volume (sawlog plus utility).
Class	Timber sale size class determination (S-SBA, O=open sale to all bidders).
FY00 Gate 2 (NEPA)	Only appears in the year the NEPA document will be decided. Number designates potential volume.
FY00 Gate 3 (Layout)	Only appears in fiscal year sale is to be laid out and appraised. May appear in more than one year.
FY00 Gate 5 (Offer)	Only appears in fiscal year sale is to be offered. Number designates potential volume.

The location of timber sale projects are based on the land allocation directed in the Forest Plan decision. Timber sales are located where permitted based on the prescription and objectives of the land use designation. Timber sale projects are located to varying degrees in land use designations identified as timber production, modified landscape, and scenic viewshed.

As stated earlier, the District Ranger is responsible for identifying and recommending the project areas for the Ten Year Timber Sale Schedule. The considerations the Ranger makes on each project includes but are not limited to the following:

1. The project area contains a sufficient number of acres allocated to development land use designations to make timber harvest in the area appropriate under the Forest Plan. There is an adequate amount of suitable and available land for timber

harvest opportunities. Available information indicates harvest of the amount of timber volume being considered for this project can occur consistent with the Forest Plan standards and guidelines and other resource protection requirements.

2. The project and proposed timber harvest volume can contribute to achieving the goals and objectives of implementing the Forest Plan.

3. The potential investment in infrastructure (roads, bridges, log transfer facilities, camps, rock pits, etc.) is necessary for sustainable timber harvest offerings. Where infrastructure already exists, this project will enable maintenance and upgrade of the facilities, which is necessary for removal of timber volume.

4. The potential effects on subsistence and other resources.

5. Based on current year and anticipated outyear timber volume demand; volume currently under contract; anticipated Congressional allocations; and the availability of resources to fully prepare and offer this project for sale, this project is consistent and meets Forest Service Policy in the Alaska Region, Regional Guide; Best Management Practices; the Modified 1997 Tongass Land and Resource Management Plan; and all other laws and regulations governing the removal of timber from National Forest System Lands.

How Does This Project Fit into the Tongass Timber Program?

The Luck Lake Timber Sales are scheduled for offer in Fiscal Year 2000 (Tongass National Forest Ten Year Timber Sale Schedule, approved by Thomas Puchlerz, Forest Supervisor, dated 10/20/1999). Forest-wide, total offer volume being planned for Fiscal Year 2000 is 168 MMBF. In order to achieve the planned offer date, the Luck Lake Project has a scheduled Gate 2 completion date of Fiscal Year 2000 with Gate 3 implementation to begin by Fiscal Year 2000.

The Luck Lake Project is currently in Gate 2, "Volume Under Analysis". The project's action alternatives being addressed in the NEPA analysis range from 168.5 MMBF to 178.8 MMBF that could contribute to the Tongass Timber Sale Program. As described earlier, the volume of timber needed to maintain this pool is 343 MMBF. Currently, forest-wide, Pool 1 contains from 160.1 MMBF to 165.4 MMBF inclusive of this project. Therefore, the Luck Lake Project is consistent with program planning objectives and necessary to meet the goal of providing an orderly flow of timber from the Tongass on a sustained yield basis. Given the included information, it is reasonable to be conducting the environmental analysis for this project at this time.

Why Can't This Project Occur Somewhere Else?

As previously discussed, the market demand for timber for the next ten years is expected to average 160 MMBF per year. The suitable and available land base on the Tongass is capable of supporting an Allowable Sale Quantity of 187 MMBF annually, 153 MMBF of which is considered economical (i.e. the NIC I component). Based on the projected market demand for the planning cycle, all suitable timberlands will eventually be scheduled for harvest to

meet the current and projected demand for raw material in Southeast Alaska. The cumulative impact on other resources from past harvest activities, the location of timber sales under contract, and the eventual use of all suitable lands for timber sale projects makes the relocation of this project in another area inefficient and potentially contrary to the standards and guidelines of the Forest Plan.

Areas with available timber will be necessary to consider for harvest in order to seek to provide a supply of timber from the Tongass National Forest which (1) meets the annual market demand for timber from such forest and (2) meets the market demand from such forest for each planning cycle, pursuant to Section 101 of the Tongass Timber Reform Act (TTRA).

The potential effects on subsistence resources are projected to differ little based on the sequence these areas are harvested. Harvesting other areas with available timber on the Tongass National Forest is expected to have similar potential effects on resources, including those used for subsistence, because of widespread distribution of subsistence use and other factors. Harvest within other areas is foreseeable, in any case over the forest-planning horizon under the Forest Plan.

Providing substantially less timber volume than required to meet Forest Plan and TTRA Section 101 timber supply and employment objectives in order to avoid harvest in the project area is not necessary or reasonable.

It is reasonable to schedule harvest in the project area rather than in other areas at the present time based on previous harvest entry and access, level of controversy over subsistence and other effects, the ability to the complete National Environmental Policy Act (NEPA) process and make timber available to meet the needs of dependent industries. Other areas that are reasonable to consider for harvest in the near future are the subject of other project EIS's that are currently ongoing or scheduled to begin soon.

Appendix B

Response to Public Comments on the Luck Lake Draft EIS and Subsistence Testimony

Appendix B

Response to Public Comments on the Luck Lake Draft EIS and Subsistence Testimony

Introduction

Appendix B includes all written comments received for the Luck Lake Draft Environmental Impact Statement (EIS) and the Forest Service response to the items addressed in public comment. The Forest Service received a total of sixteen (16) written comments. The Interdisciplinary Team (IDT) thoroughly and objectively read and analyzed every substantive issue or concern. Individual comments/issues within each letter were numbered to facilitate analysis.

Forest Service responses provide an overview of Forest Service policy or direction regarding the issue, discuss how the issue has been addressed, and direct the reader to the appropriate section of the Final EIS, Record of Decision, or 1999 modified Tongass Land and Resource Management Plan (Forest Plan) for a more complete discussion.

Subsistence Hearings

The Forest Service held subsistence hearings for the Luck Lake EIS in six communities: Wrangell (April 8, 1999), Coffman Cove (April 12, 1999), Whale Pass (April 13, 1999), Thorne Bay (April 14, 1999), Naukati (April 15, 1999), and Klawock (April 16, 1999). Ten individuals testified at the Coffman Cove hearing and one individual testified at the Thorne Bay hearing. No individuals testified at the Wrangell, Whale Pass, Naukati, or Klawock hearings.

Letters Received from Agencies, Organizations, and Individuals

The following list includes agencies, organizations, and individuals that sent comments to the Forest Service during the 45-day comment period of the Luck Lake Draft EIS.

First Name	Last Name	City	State	Organization	Pages
Ralph	Thompson	Juneau	AK	US Dept. of the Army, Corps of Engineers	3-4
Paul	Gates	Anchorage	AK	US Dept. of the Interior, Fish and Wildlife Service	5-8
Richard	Parkin	Seattle	WA	US Environmental Protection Agency	9-12
Jennifer	Garland	Juneau	AK	Alaska Department of Governmental Coordination	13-27
		Coffman Cove	AK	City of Coffman Cove	28
Jack	Phelps	Ketchikan	AK	Alaska Forest Association, Inc.	29-31
Gabriel	Scott	Cordova	AK	Cascadia Wildlands Project	32-43
Bryan	Bird	Santa Fe	NM	Forest Guardians	44-45
Kent	Nicholson	Ketchikan	AK	Ketchikan Pulp Company	46-48
Nathaniel	Lawrence	San Francisco	CA	Natural Resources Defense Council	49-53
Cheryl	Fecko	Craig	AK	Prince of Wales Conservation League	54-55
Tim	Bristol	Juneau	AK	Southeast Alaska Conservation Council	56-59
Ron	Hull	Coffman Cove	AK		60
Mark	Minnillo	Thorne Bay	AK		61
Richard	Myren	Juneau	AK		62-71
Mike	Shafer	Thorne Bay	AK		72

Subsistence Testimony

The following individuals testified at the Coffman Cove and Thorne Bay subsistence hearings.

First Name	Last Name	Hearing Location	Pages
Ron	Hull	Coffman Cove, AK	73
Jerry	Kilanowski	Coffman Cove, AK	73
James	Geiser	Coffman Cove, AK	73-74
Pat	McDonald	Coffman Cove, AK	74
Ken	Page	Coffman Cove, AK	74
Mel	Jensen	Coffman Cove, AK	74
Frank	Wetherbee	Coffman Cove, AK	74
Bill	Fitzpatrick	Coffman Cove, AK	74
Larry	Clark	Coffman Cove, AK	74
John	Rodriguez	Coffman Cove, AK	74 & 75
Jim	Beard	Thorne Bay, AK	76

Luck Doc No 236
File Desig D4b

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, ALASKA
JUNEAU REGULATORY FIELD OFFICE
JORDAN CREEK CENTER
8800 GLACIER HWY, SUITE 106B
JUNEAU, ALASKA 99801-8079

REPLY TO ATTENTION OF:

March 30, 1999

RECEIVED
APR 5 - 1999
By________

Regulatory Branch
East Section
9-990276

Mr. Steve Kimball
U.S. Forest Service
Post Office Box 19001
Thorne Bay, Alaska 99919-9919

Dear Mr. Kimball:

This is in response to the March 1999, Luck Lake Timber Sales Draft Environmental Impact Statement (DEIS), describing a proposed timber sale near Coffman Cove, Alaska. The Corps of Engineers' regulatory authorities that relate to timber harvest operations, are based on two laws. Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) prohibits the obstruction or alteration of navigable waters of the United States (U.S.) without a permit from the Corps of Engineers. In addition, Section 404 of the Clean Water Act (33 USC 1344) prohibits the discharge of dredged or fill material into waters of the U.S., including wetlands, without a Department of the Army permit.

Normal silviculture activities for the production of forest products, which are part of an established, ongoing operation, are not subject to regulation under Section 404 of the Clean Water Act. However, to fall under this exemption the activities must not result in a conversion of an area of the waters of the U.S. to a use to which it was not previously subject, whereby the flow or circulation of waters of the U.S. may be impaired or the reach of such waters reduced. The construction or maintenance of forest roads used for the sole purpose of timber harvest activities is exempt from regulation under Section 404 of the Clean Water Act, provided the roads are constructed and maintained in accordance with Best Management Practices (BMPs) listed at 33 CFR 323.4(a)(6) to assure that flow and circulation patterns and chemical and biological characteristics of waters of the U.S. are not impaired, that the reach of the waters of the U.S. is not reduced, and that any adverse effect on the aquatic environment is otherwise minimized.

Wetlands are defined as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include "muskegs", forested swamps, fens, marshes, bogs and similar areas. The DEIS states that wetland functional assessments were made on a case-by-case basis, the roads located to minimize any adverse affects (considering water quality, fish or wildlife habitat, economic trade-off, locally scarce or unique features), and that high value wetlands (estuaries, tall sedge fens, and sphagnum bogs) were completely avoided. Excluding the no action alternative, between 3.3 to 10.9 miles of new roads would be constructed in wetlands which would impact between 16 to 53 acres

-2-

depending on the alternative selected. The objective of your preferred alternative (Alternative 3) is to harvest the most timber while minimizing new road construction, and under this alternative, 3.3 miles of new roads would be constructed which would impact 16 acres of wetlands.

COE-1 The DEIS states that all of the roads currently closed would remain closed and that 19.6 miles of roads currently open would be closed. In addition, all new roads constructed would be physically closed and stabilized upon completion of harvest activities using several methods, including removal of initial 100' sections, construction of tank traps, gating, pulling bridges, removal of drainage structures, water-barring and reseeding slopes. The document does not clearly discuss the timing of the closure however, which would be useful information for reviewing agencies and helpful if included in the Final Environmental Impact Statement. As written, it is unclear whether road closure would occur after completion of harvest activities for a particular harvest unit described in this specific sale or whether the road would remain open until all future harvests in the area were completed. Road closures clearly demonstrate that roads are being constructed for the sole purpose of timber harvest activities and are exempt from regulation under Section 404 of the Clean Water Act, provided the Best Management Practices (BMPs) listed at 33 CFR 323.4(a)(6) are met.

The wetland mapping, functional assessment and discussion of specific avoidance measures which were included in the project road cards was very helpful with regard to evaluating compliance with the above BMPs. We also appreciate your field efforts to "fine tune" the road locations to further minimize and avoid unnecessary impacts to wetlands and other waters of the U.S., and the directions provided in the road cards of steps necessary to achieve this result. Examples include keeping excavated material and overburden out of wetlands where avoidable, minimizing cut sections and drainage interruption, avoiding high value wetlands, keeping sidecast material away from streams, minimizing fill footprints, and reestablishing resident fish passage if blocked by a road. These measures are identified in the 303429 Road Card and several others, and demonstrate your efforts to comply with the above BMPs.

COE-2 We sincerely appreciate the detailed planning and field efforts taken to minimize impacts to aquatic resources in light of accomplishing your overall project purpose. Including wetland functional assessment information, wetland mapping, and a discussion of wetland avoidance measures in the project road cards, was very helpful for our review, and we would encourage you to consider using this format as a template for future documents. We are available for further discussion or clarification of our comments or regulatory requirements, as necessary. If we can provide further information, please contact me at the above address, by telephone at (907) 790-4490, or by FAX at (907) 790-4499.

Sincerely,

R. Thompson

Ralph W. Thompson
Field Office Manager

Response to Corps of Engineers

COE-1 We have clarified and updated the discussion of road closures and timing in Chapter 3 and on the road cards in the Record of Decision.

COE-2 We have noted your comments and recommendations to continue including this information on road cards.

United States Department of the Interior

OFFICE OF THE SECRETARY
Office of Environmental Policy and Compliance
1689 C. Street, Room 119
Anchorage, Alaska 99501-5126

April 30, 1999
VIA TELEFAX

ER 99/248

Luck Doc No 247
File Desig D4b

Mr. Steve Kimball
District Ranger
Attn.: Luck Lake EIS
USDA Forest Service
P.O. Box 19001
Thorne Bay, Alaska 99919

Dear Mr. Kimball:

In response to Carol Jorgensen's February 24, 1999, request, we have reviewed the February1999 Draft Environmental Impact Statement (DEIS) for the proposed Luck Lake Timber Sales in the Tongass National Forest. We offer the following comments for your consideration.

GENERAL COMMENTS

The DEIS summarizes the adverse impacts that extensive logging has had on wildlife habitat in the project area. The document describes additional impacts that would occur from the proposed timber sales, depending upon which alternative is selected. A reasonable range of alternatives is evaluated, including no action (Alternative 1), and action alternatives that minimize impacts to fish and wildlife (Alternative 2), minimize new road construction (Alternative 3), maximize timber harvest (Alternatives 4 and 6), and optimize economics for small sales (Alternative 5).

FWS-1

According to the DEIS, past harvest in the project area has caused the greatest decline in Sitka black-tailed deer habitat capability of any area on the Tongass National Forest (page 3-77). Given the existing levels of impact to habitat in the project area, we are concerned that the Forest Service is proposing Alternative 4. As analyzed in the DEIS, Alternative 4 would result in the greatest additional impact to wildlife habitat, and have the poorest economic return of any of the alternatives analyzed, except Alternative 6, which is essentially identical with respect to timber harvests and economics. We recommend selection of an alternative that would cause less adverse impact to remaining fish and wildlife habitat.

Alternatives 2 and 5 would result in 60 to 70 percent fewer miles of new roads and harvest approximately one-third to one-half as many acres of remaining "key wildlife habitats" (high

Response to Dept. of the Interior, Fish and Wildlife Service

FWS-1 We have noted your comments and recommendations. The Selected Alternative has been modified to reduce impacts of wildlife.

FWS-2 We have noted your comments and recommendations. The road corridor is designated in the 1999 modified Forest Plan with the Transportation and Utility System land use designation. Although construction of this corridor is not proposed or analyzed in conjunction with the Luck Lake Timber Sales EIS, we chose to include an alternative where the proposed old-growth reserves would not cross this land use designation.

FWS-3 The Forest Service follows the Council on Environmental Quality's (CEQ) Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act, 40 CFR Parts 1500-1508. 40 CFR 1502.10(e) states that EIS's shall consider "alternatives including the proposed action." Alternative 4 is the project proposed action referred to in this regulation, reflecting the proposed action for the project, identified on page 1-1 of this EIS.

40 CFR 1502.14(e) states that, in the "Alternatives" section, agencies shall "Identify the agency's preferred alternative or alternatives, if one or more exists..." Alternative 3, the Forest Service Preferred Alternative, fulfills this regulation. Please note that the preferred alternative and the proposed action can be, and often are, different alternatives. This language is clarified in the Final EIS.

FWS-4 The Forest Service agrees that the model estimates of deer habitat capability within the project area falls below recommended levels for sustaining both wolves and human harvest of deer (Person et al. 1997) for all alternatives including No-action.

The deer habitat capability model was recently rerun for the Luck Lake Project Area following Person et al. (1997) and as suggested by DeGayner (1996). The model was run for Alternatives 1-4, since Alternative 6 includes the same timber sale units and prescriptions as Alternative 4 and Alternatives 2 and 5 harvest propose harvesting similar volumes and acres. For the deer habitat capability model we used the post-harvest Habitat Suitability Index for clearcutting as the silvicultural prescription for the units. In actuality, post-harvest Habitat Suitability Index may be somewhat higher for planned harvest units, since all units in this Project Area a schedule for partial harvest prescriptions. Therefore, our new model outputs should provide a conservative estimate of deer habitat capability. The model and its outputs should be used for comparative purposes only due to a range of issues that affect the real life accuracy of the model to predict actual habitat capability. However, the model is a valuable tool for comparing alternatives.

You are correct in your observation that Alternative 2 has the least impact to deer habitat of all the action alternatives. New model results indicate that the historical (pre-timber harvest) deer habitat capability of 1659 deer (29.9 deer/mi2) in the project area had been reduced to 990 deer (17.8 deer/mi2) by 1999 (40% reduction over 43 years), primarily due to past timber harvest. With no additional timber harvest (Alternative 1), deer habitat capability will continue to decline to 954 deer (17.2 deer/mi2) by 2004 and 841 deer (15.2 deer/mi2) by 2154. With Alternative 2, deer habitat capability would be 944 deer (17.0 deer/mi2) in 2004 (1.2% reduction from Alternative 1), and 824 deer (14.8 deer/mi2) in 2154 (2.6% reduction from Alternative 1). Under the Selected Alternative (Alternative 3),

FWS-1 volume and low-elevation old growth), compared to Alternatives 4 and 6 (Table 2-6). Alternative 3 (the Forest Service's preferred action) would minimize road construction, but would impact 80 to 90 percent of the key wildlife habitat impacted by the proposed action. We therefore recommend either Alternative 2 or Alternative 5 as less environmentally damaging choices. According to the DEIS, sales economics also favor these less-damaging alternatives,.

FWS-2 We have additional concerns about Alternative 6, because in addition to directly adversely impacting the greatest amount of habitat, it also does not follow the recommendations of the interagency biologist group that considered the small old-growth reserves in the project area. Moreover, Alternative 6 would not provide old-growth reserve protection for a critical section of beach-fringe forest, specifically to facilitate construction of a road we believe is unnecessary and detrimental to wildlife populations in the area. This issue was identified in a Fish and Wildlife Service letter dated October 14, 1997, during the proposed Luck Lake timber sale scoping process. We recommend that the interagency group's recommendations be adopted in the proposed alternative.

FWS-3 The DEIS identifies both a preferred alternative (Alternative 3) and a proposed alternative (Alternative 4). It is not clear why such a distinction is necessary, nor why the Forest Service would apparently propose an alternative it does not prefer. The rationale for the two terms should be discussed, and the Forest Service's intent should be clarified in the Final EIS.

SPECIFIC COMMENTS

Wildlife

FWS-4 Page 3-81. The Alexander Archipelago wolf discussion indicates that habitat capability for deer (their primary prey) in the project area--which is currently near 12 deer per square mile--is well below the 1997 Tongass Land and Resources Management Plan (TLMP) requirements of 17 deer per square mile. Any of the action alternatives would further reduce habitat capability to about 11 deer per square mile. The surrounding region (9 Wildlife Analysis Areas on northern Prince of Wales Island) is also below TLMP standards and guidelines, at about 14 deer per square mile.

We agree that deer habitat capability would be appreciably reduced, and recommend that any additional harvest be designed to minimize additional impacts to deer and wolves. Although none of the action alternatives appear to comply with the TLMP standards regarding deer habitat capability, Alternative 2 does attempts to minimize harvest of the most important wildlife habitats, thereby deviating the least from the established standards.

FWS-5 The TLMP (page 4-119) directs the Forest Service to conduct pre-project surveys for endemic terrestrial mammals, assess impacts to those taxa, and design projects to provide for their long-term persistence. The TLMP Final EIS lists several endemics (page 3-410) that could be affected by the Luck Lake timber sales, including the Prince of Wales Island flying squirrel, ermine, red-backed voles, and perhaps others. We find no mention of surveys for any endemic

habitat capability prior to modifications made in the ROD that reduce harvest and without adjustments for reserve areas and partial cut harvest, would be 933 deer (16.8 deer/mi2) in 2004 (2.3% reduction from Alternative 1) and 805 deer (14.5 deer/mi2) in 2154 (4.6% reduction from Alternative 1).

As discussed above, past timber harvest (since 1954 and prior to the Forest Plan) is primarily responsible for the reduced deer habitat capability in the project area. Further, even under the No-action Alternative (1), deer habitat capability in the project area in the year 2154 will be reduced an estimated 14.6% from 1999 levels. Clear-cut stands older than 25 years contribute marginally to deer habitat capability. These older clear-cut stands enter into the "stem-exclusion" phase at approximately 26 years post-harvest and maintain those characteristics for deer for 100 years or more. Although future timber harvest will further reduce deer habitat capability, the additional reductions will be relatively small. Under the Selected Alternative (without adjustments), deer habitat capability in 2154 would represent 95% of the habitat capability that would exist under the No-action Alternative.

Closure of all new roads built for the Luck Lake sale, as well as 22.8 miles of existing roads after timber harvest is complete will help to mitigate the loss of deer habitat, and meet the variety of access management objectives. This action will reduce the density of open roads within the project area to 0.7 mi/mi2, a level compatible with Forest Plan standards and guidelines for deer habitat capability.

In addition to reducing open road density as described above, the location and boundaries of one small Old-growth Reserve (OGR) and the boundaries of a second OGR were adjusted to protect more low-elevation, high-value deer winter habitat. Moreover, all units are scheduled for partial harvesting, which has the potential, when done on a small scale, to reduce adverse effects on deer habitat compared to traditional clearcutting. Kirchhoff and Thompson (1998) studied the effects of selection harvesting on deer habitat in Southeast Alaska and concluded that removing small numbers of trees (<30/ha) distributed evenly throughout the unit (1-6 trees/0.2 ha) was most effective in maintaining deer winter range.

FWS-5 The Luck Lake Final EIS directly addresses the health of the flying squirrel population (Chapter 3, Wildlife section). The Forest Plan standards and guidelines concern mammal surveys or studies when taxonomic status is not known, in which case morphometric and genetic studies are recommended. As a result of previous studies costing hundreds of thousands of dollars, the taxonomic status of most mammals endemic to Prince of Wales Island is known.

Part of the Forest Service's biodiversity monitoring provisions under the Forest Plan allows for a constant updating of sensitive species, including recommendations by USFWS, ADF&G, and other state and federal agencies. The USDA Forest Service, Pacific Northwest Research Station began a study of the Prince of Wales flying squirrel in 1998, and it is continuing into its third year. The objectives of the study are to design a sampling protocol to assess the population status of the squirrel in varying forest habitats, and to develop a preliminary habitat model to assess the effects of habitat modification on the Prince of Wales flying squirrel (Smith and Nichols 1998).

FWS-6 The Draft EIS did state that deer habitat capability in the project area has decreased by an estimated 40% due to timber harvest between 1954 and 1997. By 2154, however, deer habitat capability is projected to decrease by 50% in the

3

FWS-5 terrestrial mammals in the Luck Lake DEIS. In keeping with the TLMP, we recommend that such surveys be conducted and the results be included in the Final EIS.

Subsistence

Page 3-53. Data provided in the discussion of human demand for deer suggests (but does not clearly state) that hunters should expect moderate difficulty obtaining deer by the end of this proposed harvest, with demand reaching 13.4 percent of habitat capability. If this interpretation is correct, the text should clearly state the impact on deer availability.

FWS-6 Despite the predicted decline in hunting success, the Forest Service concludes that significant impacts to subsistence use will not occur. However, continued timber harvest over the long-term is expected to result in declines in deer habitat capability to a level at which non-rural/non-subsistence hunting would be curtailed (subsistence priority would be in effect), subsistence users would experience difficulty obtaining deer, and deer harvest would likely be restricted. Again, the DEIS predicts that impacts will not be significant. We believe that such declines in deer populations and harvest success are likely to occur and that these impacts will be significant.

FWS-7 This section only evaluates impacts to subsistence hunting, not sport hunting. We recommend the Final EIS also specifically evaluate and disclose the impacts to recreational hunting, either in this section or elsewhere in the document (perhaps in the recreation or wildlife sections).

Silviculture and Timber Management

FWS-8 Page 3-34. The discussion of pre-commercial thinning states that the length of time during which productive understory remains for wildlife can be increased by thinning. Work at Heceta Island and elsewhere suggests that deer continue to avoid thinned stands if slash accumulations impede access. We recommend that slash be piled and burned when possible, to improve access into and through these stands, so deer can take advantage of forage that would otherwise be unavailable.

FWS-9 Page 3-36. The discussion of silvicultural systems states that a large clearcut may be considered a form of two-aged management if trees adjacent to the cut are retained. We consider this creation of a single-aged stand and do not believe it meets the intent or objectives of two-aged or uneven-aged management. Goshawk and marten standards in the TLMP were designed to improve the habitat within cut areas. Clumping is acceptable, but to meet the intent of the standards and guidelines, retained trees should be within the area cut, rather than within the area originally considered available to be cut. Recent policy clarification from the Tongass Forest Plan Implementation Team suggests that clumps may be left adjacent to the cut area, but also directs that if clumps are used, 10 percent or more of the original stand structure should be retained between clumps.

project area even if no additional timber (including Luck Lake Project) is harvested. Because of this past and impending reduction in deer habitat capability, previous environmental documents from this geographic area (USFS 1989, USFS 1993) determined a significant possibility of a significant restriction to subsistence deer hunting in the Luck Lake Project Area (WAA 1420). In fact, demand for deer was estimated to have already exceeded habitat capability to produce a harvestable surplus of deer in WAA 1420 by the late 1980s (USFS 1989, vol. 1, p.212, fig. 4-12).

Please see the Luck Lake Final EIS for a revised discussion on subsistence (Chapter 3). The deer model estimated that the project area had a carrying capacity of approximately 1,659 deer in 1954 (pre-timber harvest) and 990 in 1997. Once the model is adjusted to allow 36% predation by wolves, the deer habitat capability in 1954 is 1062 and in 1997 is 634. Estimated annual human harvest is routinely set at 10%, because deer populations that exist at carrying capacity can withstand harvest of that magnitude without tending toward instability and without causing a decrease in hunter success or satisfaction (Flynn and Suring 1993). Using a 10% estimate for hunter-take in the Luck Lake Project area allows for the hunt of 63 deer in 1997. For this analysis, we assume that Wildlife Analysis Area (WAA) 1420 represents 83% of the Project Area, and in 1997, an estimated 232 deer were legally harvested and reported to ADF&G (ADF&G 1998). That level of harvest represents 44% of deer habitat capability in 1997. Even using the historical estimation of deer density (1,062), a legal harvest of 280 deer from WAA 1420 is exceeding 10% harvest (26% respectively).

Given these data, at least four potential conclusions may be reached:

1. Deer habitat capability model is not accurately reflecting the number of deer that can be supported.
2. Estimated numbers of deer harvested are inaccurate.
3. Because hunters are taking more than 10% of the population, prey is less available to wolves.
4. Harvest levels of deer may be too high.

It is possible that what is really happening is a combination of the above. The deer habitat capability model may be underestimating the number of deer that can be supported by the habitat in the Luck Lake Project Area. The model was created using habitat variables from northern Tongass National Forest, where winters are generally more severe and volume class may have more of an impact due to snow shedding properties compared with the islands of the southern Tongass that are influenced by lower latitude and a more maritime climate. Moreover, habitat models were not designed to estimate animal numbers, nor habitat capability beyond the scope of comparing project alternatives. Therefore, applying actual harvest statistics to the habitat capability estimates may be reaching beyond the assumptions of the model. Furthermore, ADF&G estimates of hunter-take are based on hunter surveys with expansion factors used to represent all hunters. In addition, the 1997 deer harvest estimate is much higher than the 8-year average harvest level (1989-1996) of 95 deer for the Project Area (83 percent of deer harvest within WAA 1420) (Forest Plan FEIS, page 3-371). If estimated hunter-take is artificially inflated, fewer deer have been harvested from WAA 1420. Another complicating factor is that hunters may be competing with wolves for deer, especially if the deer population is on a downward trend. Over-harvest of deer may be further impacting a negatively impacted deer population.

FWS-10 <u>Page 3-39.</u> It is not clear what post-harvest silvicultural treatments, if any, are proposed as follow-up of the Luck Lake Timber Sales. The section on such treatments describes some of the factors that must be considered when planning thinning, but there is no indication of how much of the project area would be affected. We recommend that the document describe which lands would be considered and identify which lands are most likely to receive post-sale treatment. Alternatively, if thinning will not be a part of this project, but will be covered by a separate National Environmental Policy Act analysis, this should be clarified in the discussion.

Recreation

FWS-11 <u>Pages 3-25 to 3-27</u>. One of the primary recreation activities in the project area is sport hunting, especially for deer. Some bear harvest probably also occurs. Likely impacts to recreational hunting resulting from project implementation are issues of public and other agency interest. The analysis presented in the subsistence section suggests that impacts to recreational hunting could be significant, but impacts to recreational hunting are not specifically discussed in the subsistence section or elsewhere. We recommend that this issue be thoroughly discussed in the recreation section.

SUMMARY

FWS-12 Past harvests in the Luck Lake area have reduced old-growth habitat and adversely affected several wildlife species in the project area. This is perhaps best demonstrated by the reported 55 percent decline in deer habitat capability to date. Such declines are likely to affect species directly dependent on deer, including wolves and humans. Other species dependent on old growth have also likely been adversely affected.

We recommend that continued timber harvests in this area be done only if they can be accomplished in a manner that minimizes additional harm. Alternative 2, which was specifically designed to avoid harvest of stands that appear important to wildlife and fish habitats, appears to offer the best chance of protecting habitat while allowing timber harvest.

We appreciate the opportunity to comment on the DEIS for the Luck Lake Timber Sales. If you have any questions on the matters discussed above, please contact Steve Brockmann of the Fish and Wildlife Service's Ketchikan Sub-Office at 907-225-9691.

Sincerely,

Paul D. Gates
Regional Environmental Officer - Alaska

Response to Dept. of the Interior, Fish and Wildlife Service

Data are currently not available to directly address these important issues, however, the Forest Service is cooperating with ADF&G on a wolf and deer study that may answer some of these important questions. Clearly, the inconsistency in trends, the low estimates of deer habitat capability, and the small amount of available data on actual deer density suggest that there is a possibility of an impact to subsistence resources.

We have reevaluated the Luck Lake project subsistence analysis and have reached a different conclusion than that reported in the Draft EIS. The Luck Lake project has the potential for impact to subsistence and recreational deer hunting. Our current analysis supports previous analyses conducted in the Project Area (USFS 1989, 1993, 1998h), which showed that demand for deer exceeded harvestable numbers (based on habitat capability) by the mid- to late-1980s. Estimated deer habitat capability in the Project Area is predicted to decline to levels lower than which can sustain subsistence hunting in the future. Our estimates of deer habitat capability under the Selected Alternative indicate there will be an initial 4% reduction in deer habitat capability and, by 26 years post-harvest, a 19% reduction from present day habitat capability, due primarily to past timber harvest.

Road access restrictions will help optimize what remains of deer habitat capability for maintenance of wolf populations. Under the Action Alternatives, the existing open road density of 1.0 would be reduced to 0.7 miles/sq mile within the Luck Lake Project Area. In WAA 1420, under 1200 feet, the road density will be reduced 34% (.96 mi/mi2 to .64 mi/mi2).

FWS-7 Refer to response FWS-6.

FWS-8 The addition of piling and burning of slash to the pre-commercial treatment would not be operationally or economically feasible. Due to the density of the stems, as you mention, it is not physically possible to stack slash. The effects to the residual stand by attempting to burn would likely be catastrophic. The idea of providing travel corridors through thinned second growth is being explored on other projects and could be implemented on this project if they are found to be successful.

FWS-9 The spatial distribution and level of retention that determine whether a treatment is classified as a clearcut or some other regeneration harvest type is widely debated within the professional forestry community. By strict definition, clearcut methods do not leave any standing trees. However, professional opinion papers have acknowledged that, in many cases, some level of retention is appropriate to meet resource objectives. The decision to move away from the term 'clearcut' is driven by the treatment's effect on regeneration. For example, when enough existing trees are retained after harvest, a distinct, dual class of tree ages (or sizes) can be expected. We use the term "two-aged management" to describe this treatment when applied to an entire harvest unit or stand. We prescribe an even distribution of residual trees to the extent that logging systems, terrain, stand conditions, and ecosystem characteristics permit.

FWS-10 Figure Silv-2 and Table Silv-2 identify areas within the Luck Lake project area that will be considered for post-harvest silvicultural treatments.

FWS-11 Refer to response FWS-6.

FWS-12 We have noted your comments and recommendations. Please note that the 55 percent decline in deer habitat capability, quoted in the EIS, is a model representation used to compare alternatives to each other for relative effects. This model is not meant to be used to accurately predict a specific on-the-ground effect with a high degree of accuracy.

Luck Doc No 252e
File Desig 046

**EPA Region 10 Comments
on the
Draft Environmental Impact Statement (EIS)
for the
Luck Lake Timber Sales**

Introduction

We are encouraged to see Alternative 3 identified as the Forest Service's preferred alternative, as it would 1) not include any clear-cutting prescriptions, 2) minimize the amount of road building and stream crossings, and 3) reduce the number of open roads in the project area upon completion of harvest activities, and 4) apply the riparian process group standards and guidelines as prescribed in the Tongass Land Management Plan (TLMP). While all of the above features suggest to us that the project would be generally protective of the environment, we found it difficult to find information in the draft EIS which clearly discloses the environmental consequences of the project. Consequently, the comments that follow focus on information that we believe should be included in the final EIS to improve its utility as a disclosure document, pursuant to NEPA and its implementing regulations.

Level of Information in the EIS

EPA-1

While we support the efforts taken to minimize the length of the EIS, we have some concerns/questions about the amount of information that is not included in the draft EIS. The EIS, in order to meet its intended use as a disclosure document, must contain sufficient information to allow the public and decision maker to fully understand information and analyses that are important and relevant to the decision to be rendered. In that capacity, the document must contain sufficient information to "stand alone." That is, it should provide the public and the decision maker access to and an understanding of the information that is relevant to the decision without having to search out additional documents and analyses. In many cases, the EIS provides information in very general terms (e.g., miles of roads within the project area), yet no site-specific characterizations are presented (e.g., conditions of the current road system and associated impacts). As a consequence, we find it difficult to truly understand current conditions within the project area or the predicted project impacts. We believe that our general lack of understanding of the project area and projected environmental effects is, in large part, associated with the draft EIS being overly-reliant on requiring reviewers to seek out information contained in the planning record. As a result, we recommend that the following information be either appended to the EIS, or more thoroughly summarized in the EIS.

EPA-2

1. Watershed analysis.
2. Road Conditions Surveys and Access Management Planning Reports.
3. Analyses used to determine the specific areas with slopes greater than 72 percent that are "suitable for timber harvesting."
4. Description of Best Management Practices (BMPs) to be applied. Presently, they are only identified as BMP numbers.

1

Response to Environmental Protection Agency

EPA-1 We reviewed the descriptions of environmental consequences and strengthened them, where necessary, in the Final EIS.

We reviewed the current condition descriptions and strengthened them, where necessary, in the Final EIS.

EPA-2 We have noted your comment. Many commenters, including state agencies, appreciated the concise narratives, less technical language, and summary of analyses presented in the Luck Lake Draft EIS. Few people have requested copies of the watershed analysis or soils resource reports. We feel that these items are adequately summarized in Chapter 3, and do not believe that including these documents in the EIS is necessary. In the future, the Thorne Bay Ranger District will develop a list of interested parties and send them copies of the pertinent reports to accompany the Draft EIS, or otherwise make them readily available.

We have sent you the 224-page Soils, Floodplains, Wetlands, and Riparian Areas Resources Report. The discussion of the analyses used to determine specific areas with slopes over 72% that are suitable for timber harvest is included in the landslide potential section of the individual unit reconnaissance reports included in Appendix B of the Soils, Floodplains, Wetlands, and Riparian Areas Resources Report. Most of the unit reconnaissance for the Luck Lake Project occurred before the Tongass Forest Plan Implementation Clarification Papers (August 7, 1998) identified what the documentation should include, however we believe that landslide potential is adequately discussed in the soils unit reconnaissance reports. Dissection, slope steepness, soil drainage, parent material, and downslope resources are all discussed in the soils reconnaissance reports.

The Region 10 Best Management Practices (BMP's) are published in the Soil and Water Conservation Handbook, Forest Service Handbook (FSH) 2509.22. A description of how the BMP is to be applied site specifically can be found in the Soils/Water section of the unit and road cards in Appendices 2 and 3 of the Record of Decision for the Selected Alternative.

EPA-3

Watershed Analysis/Assessment

We are pleased to see that a watershed analysis was developed as part of the planning effort for this project. We view watershed analysis (WA) as a tool that is fundamental to making meaningful management decisions within a watershed. Because we believe that the watershed analysis is the "backbone" of the draft EIS (as it provides a comprehensive characterization of the current state of the planning area), we recommend that the WA be included as an appendix to the final EIS. While we understand that "incorporation by reference" is encouraged under NEPA, we feel that the WA serves as an important source of information that relates directly to the development of the proposed project. Consequently, we believe that appending the WA to the final EIS would provide easier access to information that is referred to (though not summarized) numerous times in the draft EIS.

EPA-4

Roads, Access Management, and Maintenance

We are encouraged to see that of the 63 miles of road currently open to motorized use on National Forest lands within the project area, only 43 miles of forest roads would remain open for public use upon completion of harvest activities (a reduction of 32 percent). However, while it would appear that the proposed reduction in road miles would yield some environmental benefits, we were unable to locate information in the draft EIS that allowed us to understand the current road system or the consequences of the proposed closures. Consequently, we recommend the following:

- the EIS should be revised to include a characterization of the current condition of the road system (perhaps already completed in roads conditions surveys and the watershed analysis). Currently, the EIS indicates that there are 159 existing stream crossings, but does not present the current conditions of those crossings and any environmental problems associated with them.
- the EIS should identify the specific goals intended to be achieved with the proposed road closures and the criteria used to determine which roads would be closed (perhaps already completed as part of the Thorne Bay access management efforts). Currently, the EIS presents only a very general description of the criteria used to determine which roads would be closed after harvesting is completed.
- the EIS should include analyses/discussion of how the access management goals would be met with the closure strategy, along with the associated environmental effects. Currently, the EIS presents little information that allows the reader to understand the environmental consequences of implementing the proposed access management approach.

We recommend that the EIS be revised to ensure that road closure and maintenance requirements are accurately described in both the body of the EIS and on the road cards. The closure and maintenance strategy should be consistent with the requirements of the Alaska Forest Practices Act.

EPA-5

Protection of Drinking Water Sources

Review of the unit cards presented in Appendix B indicate that several proposed units

2

Response to Environmental Protection Agency

EPA-3 We have sent the 38-page Watershed Analysis to known interested parties. We do not plan to publish the Watershed Analysis in the Final EIS.

EPA-4 We have revised the Transportation/Access section of Chapter 3 to better describe the current road system and consequences of the proposed closures. Current road conditions are also displayed on the road cards in Appendix 3 of the Record of Decision for the Selected Alternative. While Road Condition Surveys have been completed for some roads on the project area, not all roads have been surveyed. As a result, analysis of survey data is currently incomplete. We have sufficient information to support reasoned decision-making and, due to the time and cost required to obtain this information, deem this gap in knowledge to be acceptable.

The Transportation/Access section of Chapter 3 describes the goals, strategy, and effects of the access management plan. A comparison between the road closure and maintenance requirements for the Forest Service and the State of Alaska are also described in the Final EIS.

EPA-5 A map delineating the Chum Creek Watershed and a characterization of the watershed condition is provided in the Luck Lake Watershed Analysis. In the Selected Alternative, only a portion of one unit (572-405) is within the Chum Creek Watershed. No streams are located within this unit and one Class IV stream, approximately 300 feet west of the unit boundary, drains into Chum Creek.

EPA-5

(408, 410, 420) are located within the watershed used by Coffman Cove as a water source (presumably a drinking water source). We were unable to find any discussion/information in the EIS, however, that provides the public and the decision maker an understanding of the watershed that would potentially be impacted, current conditions and uses, and an assessment of potential impacts to water quality and users of the water. We recommend that the EIS be revised to include 1) a map delineating the source water area, 2) a characterization of current conditions in it, and 3) an assessment of potential impacts to the source water for Coffman Cove. This information will allow readers to understand how the project would ensure that the source water protection goals of the Safe Drinking Water Act and TLMP (S&W112(III)(A)(2)) will be met.

EPA-6

Mitigation Measures

We recommend that the final EIS include greater discussion of the mitigation measures that would be employed with the selected alternative. While we appreciate the intent of the Forest Service to minimize the length of the document, we find it difficult to determine the mitigation measures to be used by relying solely on the unit and road cards presented in Appendices B and C. We believe that a summary table of mitigation measures (including identification of and/or reference to applicable Forest Service (and other relevant) direction) should be included in Section 2 of the final EIS to provide the decision maker and the public a clearer understanding of the measures to be taken to mitigate impacts associated with project implementation.

EPA-7

Log Transfer Facilities

The draft EIS is unclear as to how (or if) log transfer facilities (LTFs) would be used with the implementation of the proposed project. The EIS indicates that the proposed action alternatives could potentially utilize the log transfer facility (LTF) at Thorne Bay and that the LTF site at Coffman Cove might be available to implement the proposed sales. While we understand that determining which LTFs might be used is dependent on purchasers of individual sales, the purpose of NEPA is to disclose current conditions and to evaluate and disclose reasonably foreseeable impacts associated with the implementation of the proposed sales. We believe that additional information is needed in the EIS to allow reviews an understanding of the site-specific implications of project-related impacts to the marine environment. We recommend that the EIS be revised to include a discussion of current conditions and activities taking place at both Thorne Bay and Coffman Cove (including summaries of recent dive reports, cleanup activities and time lines, status of current permits) and a characterization of potential impacts to those water bodies should either of the potential sites be used for transferring logs from the proposed project.

EPA-8

Cumulative Effects

We find it difficult to understand the potential cumulative effects that would result from the implementation of the proposed project and reasonably foreseeable activities in and around the project area. A critical piece of any cumulative effects analysis is a clear and comprehensive characterization of current conditions. This is currently lacking in the draft EIS. Additionally, the cumulative effects presented in the EIS are typically characterized in very general terms such

3

Response to Environmental Protection Agency

EPA-6 Few mitigation measures are associated with the Luck Lake Project. The Forest Plan Standards and Guidelines are followed throughout the project. We have included a list of specific mitigation measures in Appendixes 2 and 3 of the Record of Decision for the Selected Alternative.

EPA-7 We added a discussion of log transfer facilities (LTF's) to the Transportation section of Chapter 3 in the Final EIS. This section describes the current conditions of and projected effects on LTF's for the Luck Lake project.

EPA-8 Refer to response EPA-1. We reviewed the description of cumulative effects for each resource and have strengthened the discussion, where necessary. For example, the cumulative effects on water resources, discussed in the Luck Lake Watershed Analysis, have been more thoroughly summarized in the Luck Lake Final EIS.

EPA-8

as total acres or miles, without any indication of the environmental significance of those values. We believe that the cumulative effects analyses should present information to the public and the decision maker in a manner that allows them to determine whether potential effects are likely to be significant. Consequently, we recommend that the EIS be revised to present a characterization of potential cumulative effects which allows reviewers an understanding of whether potential impacts would be significant. We recommend that you consult the Council on Environmental Quality's *Considering Cumulative Effects Under the National Environmental Policy Act*, as it provides a useful framework for developing cumulative effects analyses. It can be downloaded from the Council's web site located at *http://ceq.eh.doe.gov/nepa/nepanet.htm*

Response to Alaska Division of Governmental Coordination, Final ACMP Consistency Determination

ACMP-1 Site-specific stream crossing, post-sale road status, and access restriction method information are provided on the road and unit cards for the Selected Alternative in Appendices 2 and 3 of the Record of Decision.

STATE OF ALASKA

OFFICE OF THE GOVERNOR

OFFICE OF MANAGEMENT AND BUDGET
DIVISION OF GOVERNMENTAL COORDINATION

TONY KNOWLES, GOVERNOR

RECEIVED
JUN 28 199?
By____________

☐ SOUTHCENTRAL REGIONAL OFFICE
3601 "C" STREET, SUITE 370
ANCHORAGE, ALASKA 99503-5930
PH: (907) 269-7470/FAX: (907) 561-6134

☑ CENTRAL OFFICE
P.O. BOX 110030
JUNEAU, ALASKA 99811-0030
PH: (907) 465-3562/FAX: (907) 465-3075

☐ PIPELINE COORDINATOR'S OFFICE
411 WEST 4TH AVENUE, SUITE 2C
ANCHORAGE, ALASKA 99501-2343
PH: (907) 271-4317/FAX: (907) 272-0690

June 25, 1999

LuckDoc No 251
File Desig D46

Ms. Chris Minnillo, Team Leader
U.S.F.S., Thorne Bay Ranger District
P.O. Box 19001
Thorne Bay, AK 99919-9919

Dear Ms. Minnillo:

SUBJECT: LUCK LAKE TIMBER SALE DEIS
State ID No. AK 9903-14JJ
FINAL CONSISTENCY FINDING

The Division of Governmental Coordination (DGC) has coordinated the State's review of the U.S. Forest Service's consistency determination for the proposed Luck Lake Timber Sale. The FS found the activity consistent, to the maximum extent practicable, with the Alaska Coastal Management Program (ACMP). The location of the sale is Prince of Wales Island (POW), approximately 17 air miles north of Thorne Bay, Alaska. It encompasses an area of north central POW that extends from the community of Coffman Cove south to just north of Little Ratz Harbor. It includes value comparison units (VCUs) 572, 581, 582, and 583.

The USFS has identified Alternative 3 as the Preferred Alternative for this timber sale. This alternative proposes the harvest of approximately 857 acres of commercial forest land, producing approximately 14.2 MMBF of timber. New road construction would be 2.6 miles, which would be closed after harvest activities.

ACMP-1 We appreciated the concise format of the DEIS and the non-technical manner in which the information was presented. We hope that the site-specific stream crossing information and clarification regarding the post-sale road status and closure methods (referenced in the NEPA comments) will be provided in the FEIS.

This final consistency finding, developed under 6 AAC 50, applies to the federal consistency determination required for the project per 15 CFR 930 Subpart C. Comments were offered pursuant to 6 AAC 50 of the ACMP in the proposed finding of May 7, 1999. We received a faxed letter and additional information from the FS on June 1, 1999, which listed modifications

01-A35LH

printed on recycled paper

Luck Lake Timber Sale Final Finding 2 June 25, 1999

planned for the final EIS. Based on these modifications, the State concurs with the FS determination that the sale is consistent to the maximum extent practicable.

The following includes responses to our proposed consistency finding (taken from the FS' June 1, 1999 letter), which are now incorporated into the project description, as well as some of our original comments:

Miscellaneous Unit and Road Comments:

General: The FS has indicated that accurate and site-specific stream crossing information will be included on the road cards and road card maps will be edited to be consistent with the road card information. Unit cards will be updated to include information that is currently lacking.

ACMP-2

Units 572-409 & 410: The 3030429 road, which accesses units 572-409 and 410 will be relocated to avoid the steep V-notch and will now access these units from the east. Both units have slopes less than 50 percent and no streams within the unit boundaries. Unit 572-410 is located adjacent to Chum Creek. A 100-foot no-cut buffer and a windfirm buffer have been designated to prevent sedimentation into Chum Creek. The alternative 3 map will be updated to include the new road location.

Unit 572-417: The logging system for this unit will be changed from running skyline to helicopter.

Unit 581-449: The unit card map for this unit will be updated to show the Class III orange/white stream in place of the Class IV AHMU stream currently on the map.

Important Fish and Wildlife Habitat:

ACMP-3

Fish Habitat. We have several concerns for fisheries resources within the Project Area, particularly in the Luck Lake drainage. Forty-six percent of the total Luck Lake watershed has been harvested to date. The Watershed Analysis indicates that the three defined sub-basins (Luck Lake, Luck Creek and Eagle Creek) received the highest overall ratings of concern in the project area. This watershed is described as "disturbed" on the basis of stream channel characteristics. The Watershed Analysis discusses the high sediment risk associated with this area, particularly the Southwest Fork of Luck Creek. In addition, the Southeast fork of Luck Creek is described as "more susceptible to natural disturbance events that affect fish habitat". The DEIS identifies the lower reach of Luck Creek as a high-density fish habitat area, containing spawning habitat for coho and sockeye salmon, as well as possibly for steelhead.

We concur with recommendations to close the 3000328 and 3000329 roads in the Southwest fork area, which are described as erosive and sources of sediment. Two units (581-452 and 581-453) are proposed in Alternatives 3,4, and 6 for the slope above the Southeast fork, to be helicopter yarded. The FS informed that both of these units were field reviewed by a soil scientist. Unit 581-452 was reconfigured to avoid approximately 31 acres of slide-prone areas

Response to Alaska Division of Governmental Coordination, Final ACMP Consistency Determination

ACMP-2 FDR 3030351 has been proposed to access units 572-409 and 572-410 in Alternatives 4 and 6, replacing FDR 3030429. The location of this road is shown on the Alternative 4, Alternative 6, Luck Roads Existing Condition, and Luck Roads Proposed Access Plan maps in Chapter 2 of this FEIS.

ACMP-3 We revised the Water section in Chapter 3 to more thoroughly summarize the information from the Watershed Analysis.

in the central and southern portions of the unit. Unit 581-453 was also reconfigured, and approximately 18 acres in the western, central, and southern portions of the unit were dropped to avoid the very high and high MMI soils.

Old-growth reserve locations. - The objectives of the Old-growth Reserve LUD include to "maintain viable populations of...fish and wildlife species and subspecies that may be closely associated with old-growth forest" and "Contribute to the habitat capability of fish and wildlife resources to support sustainable human subsistence and recreational uses" (1997 **TLMP**, page 3-76). The State fully supports these objectives, because they also contribute to maintaining sustained yields of fish and wildlife and protection of important wildlife habitat (Alaska Forest Practices Act, **AS 41.17.060 [c] [1], [3], and [7]**).

ACMP-4 The Forest Service involved ADF&G and U.S. Fish and Wildlife Service in discussions concerning the best locations for small OGRs in the Project Area. There was interagency consensus that the tentative locations directed by the 1997 TLMP were inadequate to protect important habitat in the Project Area. As discussed in the DEIS, the biggest issue was the limited amount of low-elevation productive old-growth habitat protected by the original OGRs, especially considering the extensive previous harvest in low-elevation areas. We support the redesign of the OGR system proposed in Alternatives 2,3,4, and 5. We do not support the location of the Baird Peak (VCUs 582 and 583) OGR proposed in Alternative 6, because it does not include important low-elevation habitat for deer, wolves, eagles, and other species.

Wolf Habitat Management Program:

ACMP-5 The Thorne Bay Ranger District is currently in the process of initiating a Wolf Habitat Management Program analysis at the multiple WAA or biogeographic province level, as directed by the Tongass Planning Implementation Team and the May 11, 1999 letter for implementing the April 1999 Forest Plan ROD. The analysis will be conducted in cooperation with other agencies including the DFG and the USFWS. The FS plans to focus on the Luck Lake project at one or more of these meetings and determine whether these agencies concur with their current proposal, or whether additional mitigation will be necessary to meet the wolf standards. The ROD for Luck Lake FEIS will summarize the interagency group's findings.

Timing Windows:

In some cases, the road cards specify timing windows for in-water construction activities different from the standard dates that ADF&G specifies for fish passage structures in anadromous streams on Prince of Wales Island.

- The 3030630 road card indicates a Class I stream in close proximity to catalogued coho and pink salmon habitat. Because of the presence of pink salmon, our proposed finding included the recommendation that the timing dates for instream work at this site should be 6/15 to 8/7, not 6/15 to 9/1 as listed. The FS letter stated that the site was not field reviewed by fisheries personnel. Based on field experience with pink and chum salmon,

Response to Alaska Division of Governmental Coordination, Final ACMP Consistency Determination

ACMP-4 The Selected Alternative includes the old-growth reserve locations proposed in Alternatives 2, 3, 4, and 5. Refer to Appendix 1 of the Record of Decision for more information.

ACMP-5 The Forest Service has initiated development of a formal Wolf Habitat Management Program that incorporates recommendations and analyses of land and wildlife managers from ADF&G, USFWS, and the Forest Service. The resulting interagency, interdisciplinary team has met four times (7/12/99, 8/26/99, 9/16/99, and 10/15/99) and is in the process of analyzing wolf habitat needs and developing a written assessment and Wolf Habitat Management Plan. The Luck Lake EIS was discussed at the 8/26/99 and 9/16/99 meetings.

and the crossing distance from the cataloged stream, the coho salmon timing window of June 15 to September 1 was applied. Fisheries personnel will conduct a site visit to this stream crossing prior to the FEIS, and either minnow trap or electrofish for species presence. The final timing window will be based on the results of this site visit. This is acceptable to the State.

- 3030429 road - The road access to units 581-409 and 410 will be relocated to entry from the east side of unit 581-409. This was not listed on the road card. The State request for a pink/chum/coho timing window of June 15 to August 7 was in error. The stream crossing should actually have a coho salmon timing window of June 15 to September 1 instead. The stream crossing is located up stream of the pink/chum salmon drop-off point.

The FS has informed that the discussion of "options to increase the length of the construction window" on page 3-67 will not appear in the Final EIS.

Road Closures:

Roads that will be placed in inactive status will require the performance of periodic maintenance consistent with the standards of **11 AAC 95.315(c)**. This includes (1) keeping ditches and drainage structures maintained as necessary to assure water flow and fish passage; (2) keeping the road surface crowned, outsloped, water barred, or otherwise left in a condition not conducive to erosion; and (3) keeping ditches and drainage structures clear and in good repair. All roads within the project area that are proposed to be placed in inactive status but not maintained, must be closed according to the standards of **11 AAC 95.320**. Specifically, this includes outsloping or water barring the road surfaces, leaving ditches in a condition suitable to reduce erosion, and removing all drainage structures, including bridges, culverts, and their associated fills.

We are concerned about roads designated for "organic" closure (e.g., 3000305 road). We are not opposed to closure using organic methods, including allowing roads to grow in with alders, but this should occur following removal of crossing structures. To meet the requirements of the FPA, roads must either be closed, with all structures removed, or it must be periodically maintained.

It is also not clear from the road cards or from the narrative sections when road closures are expected to take place. There are conflicting statements on several road cards as to the need for future access for silvicultural activities. The FS has stated they will clarify information on the road cards and in Chapter 3 of the Final EIS to show timing of road closures and better explain the management strategy for affected roads.

Information Needed for ACMP Review:

Although the information included on the road cards in the DEIS is a substantial improvement over that provided in some previous NEPA document, the road cards still

ACMP-6

lack important information relating to stream crossings, making it difficult to fully evaluate the proposed activity for consistency with the ACMP. Both the unit cards and the road cards are formatted to provide a substantial amount of valuable information, but although the formats are good, several pieces of important information are lacking. For example, the Mass Movement Index (MMI) section of the unit cards, which was intended to display the acres of low, medium, high, and very high MMI soils, as well as the acres of slopes greater than 72 percent, is blank on each unit card. The same is true of the Wetland Information and High Habitat Value sections of the cards (according to the unit cards, only one unit [572-405] contains high value deer habitat -- despite the fact that the volume class breakdown section of the card indicates that the entire unit is comprised of volume class 4 timber).

ACMP-7

The road cards lack important, site-specific information regarding stream crossings, including bankfull width, bankfull depth, gradient, substrate, and the types of structures to be used at each crossing site. Even bridges are not indicated on the accompanying maps. Although gaps in information might be expected for areas of new road construction, information should be readily available now for most proposed reconstruction. These have not been provided. We can only assume that part of the missing information is due to a lack of field review of each crossing site, as the Stream Crossings section on most of the road cards indicates that the limited amount of information that is presented is based on GIS interpretation. In addition, although a few of the cards indicate that the information is based on field review, they still lack the site-specific information that the cards were formatted to provide.

This apparent lack of field review may be the reason for the discrepancies that exist between the Stream Crossings section of the road cards and what it shown on the road card maps. Specifically, for 17 roads, the information provided in the Stream Crossings section concerning the number of streams that will be crossed and their AHMU classifications is not consistent with what is depicted on the road card maps (e.g., the Stream Crossings section indicates that one Class IV stream will be crossed by the alignment, but the road card map shows four or five Class III crossings). Consequently, we are unable to determine how many and what types of streams will actually be crossed, and the potential impacts of these crossings on downstream water quality and fish habitat. However, the FS has informed that accurate and site-specific stream crossing information will be included on the road cards and road card maps will be edited to be consistent with the road card information.

In contrast to the stream crossing information on the road cards, the Road Management Objectives and Design Narrative Information sections of the cards are very good, particularly the Soils/Water section (despite the conflicting information regarding closure methods). They provide a clear indication of slope stability concerns, the BMPs that will be applied, and the rationale for and limitations to the routes selected, including wetland types and the reasons why the wetlands could or couldn't be avoided.

Response to Alaska Division of Governmental Coordination, Final ACMP Consistency Determination

ACMP-6 We modified and filled in the header section of the unit cards for the Selected Alternative. Refer to Appendix 2 of the Record of Decision.

ACMP-7 We modified the road cards to include site-specific stream crossing information. We used road condition survey information for many of the road cards. Due to the difficulty and time involved with editing the streams layer in GIS, only the stream information obtained during field visits to individual units was updated. We contacted Alaska Department of Environmental Conservation (ADEC) in November 1999 and explained this new strategy. ADEC said that having the milepost numbers for each unedited stream crossing was sufficient for their review.

Luck Lake Timber Sale Final Finding 6

June 25, 1999

Chum Creek Watershed:

We are concerned about several units proposed for harvest that are within the watershed used by Coffman Cove for their water supply, however, the FS has stated that units and roads have been designed to mnimize impacts in this watershed, including Coffman Cove's water source. As the DEIS indicates, the east fork of Chum Creek is the drinking water source for the community of Coffman Cove, as well as catalogued for pink, chum, and coho salmon, Dolly Varden char, and cutthroat trout. Management activities, particularly road construction (the 3030429 road in particular) and stream crossings, which occur upstream of the community's water intake have the potential to degrade water quality through the introduction of sediment, especially during culvert installation and removal. The FS has informed us of the following:

1. Road 3030429 will be relocated and now access units 572-409 and 572-410 from the east. Both units have slopes less than 50 percent and no streams within the unit boundaries. Unit 572-410 is located adjacent to Chum Creek. A 100-foot no-cut buffer and a windfirm butter have been designated to prevent sedimentation into Chum Creek.

2. Unit 572-408 has slopes less than 50 percent, with no streams located inside the boundary. One Class IV stream which drains into Chum Creek is located approximately 150 feet north of the unit boundary.

3. Only the western portion of unit 572-405 is located within the Chum Creek watershed. The slopes in this portion of the unit are gently, less than 50 percent. No streams are located within the unit and one Class IV stream, which drains into Chum Creek, is located approximately 300 feet west of the unit boundary.

4. Unit 572-420 has slopes of less than 50 percent gradient. One Class IV stream bisects the eastern unit polygon. This stream becomes a Class III, orange/white stream as it exits the unit. A windfirm buffer has been designated along this stream.

ACMP-8

5. The FS has stated that they will contact the City of Coffman Cove for a final review of these units before issuing the FEIS. In addition, Coffman Cove is in the process of opening a water filtration and treatment plant. The FS intends to find out when the plant is expected to be operational.

Advisories

Please be advised that although the State has found the project consistent with the ACMP based on the project description, you are still required to meet all applicable State and federal laws and regulations. Your final consistency finding may include reference to specific laws and regulations, but this in no way precludes your responsibility to comply with other applicable laws and regulations.

Response to Alaska Division of Governmental Coordination, Final ACMP Consistency Determination

ACMP-8 18AAC 80.520 makes it clear that the owner or operator of a Class A or B public water system, who seeks to avoid filtration, "demonstrate through ownership or written agreement with landowners within the watershed, that the system can control all human activities that may have an adverse impact on the microbiological quality of the source water." It is the water system owner or operator's responsibility to pursue a written agreement (if necessary) with the landowner regarding activities within the watershed. The owner or operator of the water system has been notified, through the scoping process, of proposed activities within the watershed.

In a letter to the Coffman Cove City Council (11/17/1999), we requested 1) that they identify any concerns regarding units within the Chum Creek watershed and 2) whether Coffman Cove wanted to enter into a written agreement regarding our proposed activities within this watershed. We provided Coffman Cove with a copy of Alaska Department of Governmental Coordination's "Final Consistency Determination" letter (06/25/1999) and information on all units and roads proposed in this watershed. The City Council discussed this matter on 11/17/1999 and again on 02/16/2000. Minutes from the 02/16/2000 meeting identify that the City of Coffman Cove approves of the Forest Service proposal to harvest areas in the Chum Creek watershed. The City did not request a written agreement for these activities.

The City of Coffman Cove also constructed a filtration and treatment plant for their water source, which became operational in November 1999.

If changes to the approved project are proposed prior to or during its siting, construction, or operation, you are required to contact this office immediately to determine if further review and approval of the revised project is necessary. If the actual use differs from the approved use contained in the project description, the State may amend this final consistency finding.

Should cultural or paleontological resources be discovered as a result of this activity, we request that work which would disturb such resources be stopped, and that the State Historic Preservation Office be contacted immediately (269-8720).

This final consistency determination is a final administrative decision for purposes of Alaska Appellate Rules 601-612. Any appeal from this decision to the superior court must be made within 30 days of the date of this determination.

If you have any questions regarding this process, I can be reached at (907) 465-3177, or email Jennifer_Garland@gov.state.ak.us.

Sincerely,

Jennifer R. Garland
Project Review Coordinator

Cc:
** Kevin Hanley, DEC, Juneau
** Moira Ingle, DFG, Klawock
** Bill Hanson, DFG, Juneau
** Tom Paul, DFG, Juneau
** Jim McAllister, DNR, Juneau
Judith Bittner, DNR/SHPO, Anchorage
Steve Brockmann, FWS, Ketchikan
Buck Lindekugel, SEACC, Juneau
Tom Waldo, SCLDF, Juneau
*=fax, **=email transmission

Attachment to Letter from Jennifer Garland, State of Alaska, Division of Governmental Coordination, to Chris Minnillo, USDA Forest Service

Luck Lake Timber Sale Final Finding 8 June 25, 1999

NEPA Issues

The following comments are offered pursuant to the National Environmental Policy Act.

Background:

The Luck Lake DEIS was developed under the Land Use Designations (LUDs) and Standards and Guidelines (S&Gs) of the 1997 Tongass Land Management Plan Revision (1997 TLMP). These S&G's remain in effect until September 30, 1999 and form the basis for ADF&G's review of this DEIS.

DGC-1 The 1997 TLMP was modified in April 1999, through issuance of a new Record of Decision (ROD). In the Modified 1997 Forest Plan, LUDs in 18 Areas of Special Concern were changed from 'development' to 'mostly natural'. The 1999 ROD also modifies or adds two S&Gs, "to improve subsistence opportunities, and to reduce risk to old-growth ecosystem viability." Specifically, the wolf S&G was modified to limit the allowance of open road per square mile to 0.7 miles or less per square mile, "to reduce risk to wolf viability and sustainability." In addition, a new S&G was added that increases timber harvest rotation from 100 to 200 years in 42 Wildlife Analysis Areas (WAAs), including North Central Prince of Wales and the Luck Lake Project Area (largely contained within WAA 1420). The extended rotation S&G was added "to address projected deer habitat capability declines." It is unclear at this time exactly how signing of the 1999 ROD will affect the Luck Lake project, but if the project requires further review or modifications due to implementation of the April 1999 ROD, ADF&G requests an opportunity to participate in this review.

General Comments:

The DEIS is generally concise and well written. In some instances, however, it appears that the effort to be concise has resulted in the omission of important information, as will be discussed below. The project incorporates 1997 TLMP S&Gs, including partial-cut harvest prescriptions and process group riparian buffers, while minimizing additional road construction and avoiding additional harvest in low-elevation habitat important to fish and wildlife. We appreciated the opportunity to participate in the interagency review of some components of the Project such as refinement of the location of small old-growth reserves (OGRs). Overall, the DEIS reflects a laudable effort on the part of the FS to address resource concerns while attempting to provide a range of timber harvest opportunities. We do, however, have a number of concerns, as detailed below.

Wildlife Concerns:

DGC-2 *Marten* — The DEIS states (page 3-80) that "after project completion and implementation of the access management plan, the open road density of the Project Area will be reduced from the current 1.2 miles per square mile to 0.8 miles per square mile. This is still at a level

Response to Alaska Division of Governmental Coordination

DGC-1 The Luck Lake Final EIS is fully consistent with the 1999 modified Forest Plan.

DGC-2 The Luck Lake Draft EIS was in error. The current open road density in the project area is 1.08 mi/mi2, and the density after implementation of the Selected Alternative and the access management plan will be reduced to 0.67 mi/mi2. Suring et al. (1992) suggests that marten densities may be reduced by as much as 90% when road densities approach 0.6 mi/mi2. Although road densities according to the Luck Lake access management plan are not optimal for marten, it is a significant improvement over the current road density. As further mitigation and in addition to habitat protected in old-growth reserves, under the Selected Alternative, a large area (5184 acres) east of Luck Lake (Ratz Harbor Roadless Area) will have no (open) roads. Such areas of roadless habitat are likely more important to marten conservation than average road densities across project areas. That is, road distribution may play a more important role than road density (Flynn 1993).

DGC-2

estimated to have substantial effects on marten populations by providing access for trapping." If this road density is recognized as a potential problem for marten, why was it targeted?

Black bear — Black bears are not often mentioned as a species of concern for timber sales, but are an important game species in the Luck Lake Project area. The Project area is largely contained within WAA 1420, which has been subject to increased hunting pressures for black bears over the last decade. This WAA is considered to be one of the most heavily used on Prince of Wales Island, according to ADF&G Division of Wildlife Conservation reports. A total of 93 bears were harvested from this WAA from 1990 through 1995 (19 bears per year, on average).

DGC-3

In addition to increased hunting pressure, habitat degradation may also affect bears in the area as a result of the substantial previous clearcut harvesting. Although clearcuts generally provide bears with an abundance of edible forbs and shrubs during the first 10 to 20 years following logging, they become unproductive as conifer canopies close. Second-growth stands also lack large hollow trees and root masses used by bears for denning habitat. As second growth canopies close, bear populations in these areas are expected to decline over the long term. Although the Luck Lake project proposes little or no additional clearcut harvesting, the Final EIS should include an analysis of the cumulative effects of timber harvest on black bears within the Project Area. As requested in our scoping comments, analyses relating to bears should include disturbance effects of roads that are part of the habitat capability models for bears.

DGC-4

Queen Charlotte Goshawk — The level of previous harvest in the Project Area will require application of goshawk and marten S&Gs that require partial cut prescriptions for the majority of the units proposed as part of the Luck Lake Project. Any identified nests will receive protective buffers. Nevertheless, we recommend that unit 581-404 be deferred until additional goshawk surveys, including dawn surveys, can be conducted in this unit. The narrative in Chapter 3 of the DEIS (page 3-59) indicates that a goshawk detection was recorded near this unit in 1997, although the unit card does not mention the detection and does not indicate that additional surveys were conducted.

The unit cards for units 572-404, -406, -407, -408, -409, and -410 indicate that a goshawk was seen flying over these units. It is unclear whether these sightings occurred on the same day and are likely to be multiple sightings of the same bird, or whether they are indicative of a probable nest in the area. Another goshawk detection was recorded very recently (April 1999) in the same area. We recommend additional survey work in the area of these units as well.

Access Management:

As in our scoping comments, we again commend the FS for its on-going efforts to develop access management strategies for the Thorne Bay Ranger District, including the district-wide Roads Analysis. ADF&G has participated in Interdisciplinary Team (IDT) access management planning activities for the Control Lake sale and in discussions about re-assessment of closures

Response to Alaska Division of Governmental Coordination

DGC-3 While black bears were not selected as a management indicator species for the Luck Lake project, we have complied with this request for analyses using the habitat capability model for bears. The results are listed below.

Our model indicates a less than 1% decrease in black bear (*Ursus americana*) habitat immediately following timber harvest (all alternatives, all road models), and a 5% decrease in black bear habitat over a one hundred year period. This decrease in bear habitat over the long term is attributed to a reduction of habitat capability when second growth reaches the "stem exclusion" phase (>25 years post harvest; Alaback 1984).

During the "stem exclusion" phase of second growth succession, the tree canopy closes and limited light reaches the forest floor, dramatically reducing shrub production (Alaback 1984). Black bear forage food consists primarily of new plant growth in open areas in spring and fruits such as blueberries and salmon berries throughout the summer. When available, migrating salmon are also an important food source for black bears (McIlroy 1972, Modafferi 1982).

Black bears are highly adaptable and can tolerate moderate habitat disturbance as long as the basic requirements for food and cover are satisfied (Lawrence 1979). Openings tend to enhance the value of forest habitat for black bears, unless the openings are very large; the centers of large openings lacking cover are not used (Suring et al. 1988). Availability of cover is second in importance only to food when considering habitat suitability for black bears (Lindzey and Meslow 1977, Landers et al. 1979). Although their territories include a wide range of plant communities, black bears do not forage far from the cover provided by mature to old growth forest stands (Erickson 1965, McCollum 1973, Lawrence 1979, Barber 1983, Schwartz and Franzmann 1983).

Black bear den sites are often in excavated and natural depressions under tree roots, stumps, and downed logs (Erickson 1964, Rogers 1970, Lindzey and Meslow 1976, Tietje and Ruff 1980). Dens are usually located in mature and old growth forest stands, however they also have been found in earlier seral stage forests where snags or downed logs of sufficient size are maintained (Kemp 1979). Once snags in clearcuts and second growth forests deteriorate, however, replacement den sites will not be available until the stand assumes old growth characteristics (approximately 250 years; Suring et al. 1988).

The magnitude of effect on black bear habitat is highly dependent on the treatment of roads in the model. The estimated density of bears is reduced by approximately 20% when the model incorporates a reduction in habitat value correlated to the indirect effect of roads (hunting mortality). Incorporation of the access management plan into the model lessens the impact of roads by considering road closures (gated, tank trapped, signed, etc).

Black bear populations on Prince of Wales Island have been considered relatively stable, based on opinions of hunters and Alaska Department of Fish and Game personnel (Kvaalen 1992). However, habitat degradation and increasing hunting pressure across Prince of Wales Island, and particularly in WAA 1420, which is in the Project Area, may warrant concern over bear population stability over time.

With the implementation of partial-cuts, riparian buffers, and beach & estuary

Luck Lake Timber Sale Final Finding 10 June 25, 1999

planned as part of the Central Prince of Wales (CPOW) timber sale. We have also participated in public meetings on access management issues, and expect to continue to do so.

DGC-5 We are concerned, however, about possible misunderstandings about our position on the process, and about the representation of the process in the Luck Lake DEIS. The Travel Management Narrative for several road cards (e.g., 3030350, 3030354, 3030356, 3030360, 3030362, 3030429, 3030345, 3030630, 3030720) states: "Close road for wildlife and reduced maintenance costs." The Wildlife section for most of these cards states: "Site-specific and road density concerns." The DEIS discusses the access management plan for the Project Area (page 3-65), which is intended to guide current and future management of the road system. ADF&G was not involved in any formal manner, and as a result we are unsure as to what kind of assessment was conducted that led to closure decisions as part of the plan. Whether or not we agree with the proposed closures, ADF&G believes it is important — and in the best interest of all agencies concerned — to have a formal assessment of the closure strategy, especially given the current public scrutiny of road closure issues on Prince of Wales Island.

Wildlife concerns are obviously of major importance to ADF&G in considering road closures. Two wildlife concerns often cited by the FS at public meetings as reasons for road closures are "wolf and deer mortality." The 1997 TLMP Wolf S&Gs direct the FS to work with ADF&G and FWS to develop and implement a Wolf Habitat Management Program in areas where wolf mortality concerns have been identified. Although the Forest Plan is not specific as to the format that the interagency interaction should follow, ADF&G believes that the intent of this S&G has not been met in development of this DEIS. Interagency involvement in the development of a Wolf Habitat Management Program should be a significant component of the Access Management plan. We recommend a more formal process, including a comprehensive analysis, written assessment and plan. Ongoing research by the ADF&G Division of Wildlife Conservation may be able to provide refined assessments of mortality concerns for specific areas.

DGC-6

ADF&G's scoping comments for the Luck Lake project indicated that research has documented high wolf mortality associated with road access in the Project Area, suggesting that the Wolf Habitat Management Program element of the S&G should be implemented. To reduce mortality, the 1997 S&G directs the FS to implement effective road closures to achieve open road densities of 0.7 to 1.0 miles per square mile or less. Section 13 of Appendix N indicates that WAA 1420 has an existing open road density of 2.16 miles/square mile, and would require closure of 72.2 miles of existing road to meet an open road density of 0.7 miles per square mile. In contrast, the DEIS states that "open road density in the Project Area is currently 1.2 miles per square mile (page 3-78). It further states (page 3-80) that "after project completion and implementation of the access management plan, the open road density of the Project Area will be reduced from the current 1.2 miles per square mile to 0.8 miles per square mile." We request an explanation of the differences between these figures.

DGC-7 In addition, although it is unclear at this time how the 1999 ROD will be applied to the Luck Lake Project, the revised S&G requires an open road density of 0.7 miles per square mile or less. The targeted road density of 0.8 was commendable under the 1997 Wolf S&G, although

fringe standards and guidelines, the old growth reserve strategy, habitat degradation will be minimized in the Project Area. Additionally, project specific road closures will reduce open road densities from 1.08 mi/mi^2 to 0.67 mi/mi^2, which may reduce hunting impacts within the Project area. At this time no data exists to suggest a threat to the viability of black bears in the Luck Lake Project Area.

Table DGC-1
Black bear habitat capability estimates for the Luck Lake Project Area, using models that differentially assess the impacts of road densities*.

	2002					2095			
	Existing	Alt. 2	Alt. 3	Alts. 4 & 6	Alt. 5	Alt. 2	Alt. 3	Alts. 4 & 6	Alt. 5
No roads reduction	47.06	46.85	46.77	46.72	46.85	44.92	44.92	44.92	44.92
Roads reduction - no access mgmt. plan	37.69	37.52	37.45	37.41	37.52	35.97	35.97	35.97	35.97
Roads reduction - implement access mgmt plan	38.99	38.82	38.75	38.71	38.82	37.26	37.26	37.26	37.26

* Habitat Capability is expressed in number of bears per square mile

DGC-4 Regrettably, clerical errors were published in the Luck Lake DEIS and the draft Biological Evaluation. In a recent and thorough review of the original goshawk field data, we found clear indications of goshawk detections during an April 7, 1997 valley watch survey of the following units: 572-404, 572-406, 572-407, 572-408, 572-409, and 572-410. During that survey a goshawk was seen circling twice over 572-404, and flew in the direction of 406, 407, and 408. Additionally, a goshawk was seen in the vicinity of 572-404 and 572-406 on July 16, 1998. The report of the goshawk detection from 581-404 was erroneous.

The goshawk sightings near 572-404 suggest the possibility of a goshawk breeding territory. Additional surveys were conducted in this area during the 1999 breeding season. Dawn surveys combined with taped broadcasts of conspecific vocalizations were conducted in the vicinity of units 572-403, 572-404, 572-405, 572-406, 572-407, and 572-408 on the following dates: 4/28, 5/10, 5/18, 6/4, and 7/15. Another taped broadcast survey was conducted on 6/9. Although a possible goshawk vocalization was reported during the survey on 4/28, the observation was not confirmed and no other vocalization, sighting, or other evidence of breeding was recorded during any of the subsequent surveys. Similarly, a dawn survey followed by broadcasts of taped conspecific calls was conducted in the vicinity of the above units as well as units 572-409 and 572-410 on 7/15. Again, there was no indication of the presence of goshawks or of a breeding territory.
A probable goshawk nesting territory, that includes all or part of units 581-423 and 581-444, was discovered in 1999, as a result of a raptor sighting reported by a Forest Service employee on June 29, who was repeatedly stooped by one raptor while a second raptor vocalized from an adjacent forest stand between the two units. The employee's description of the two raptors indicated an adult female goshawk accompanied by a fledgling. At that time of year, the fledgling could not have been far from the nest. In the Selected Alternative, harvest has been deferred in both of those units from until the exact location of any goshawk nest in the area can be determined.

Luck Lake Timber Sale Final Finding 11 June 25, 1999

DGC-7 it appears to be too high to address marten mortality concerns. However, we recommend that the FS seek to meet this new S&G for the project area even if they are not mandated by law to do so.

Community Issues:

DGC-8 Although Chum Creek is the domestic water source for Coffman Cove, the DEIS does not indicate whether the coordination between the Forest Service and representatives of the community has occurred, as required by TLMP. Specifically, Soil and Water standard and Guideline S&W112.III.A.2 states *"For unincorporated communities and other public water systems, coordinate with owners or operators of public water systems to meet watershed protection needs on a case-by-case basis. Develop written agreements with owners or operators consistent with 18 AAC 80.520(c)(3) and 36 CFR 251.9, if appropriate. Consult with owners or operators before authorizing management activities."* Consequently, if this coordination has not yet occurred, it must be done prior to signing the ROD for the Luck Lake project.

DGC-9 High Value Community Use Areas. According to Chapter 1 of the DEIS, significant issues for the Luck Lake Project were identified through public and internal scoping. ADF&G disagrees that the concept of Community Use Areas, identified under "Other Concerns", is not a significant issue. The language in the DEIS indicates that this issue is beyond the scope of the current project, having been considered in the revision of the Forest Plan and its allocation of land use designations, and that concerns specific to high value fish and wildlife habitats are addressed as one of the issues designated "significant." ADF&G is mandated to provide a sustained yield of fish and wildlife for subsistence and recreational use, and believes that whereas OGRs within the revised TLMP were designed to maintain habitat for minimum viable populations, they are insufficient to supply sustained uses of fish and wildlife to meet the demands of hunters, anglers, and subsistence users. The discussion in the DEIS of "Issue 1: High Value Wildlife and Fish Habitat", recognizes the potential need for measures *in addition to* S&Gs (emphasis added), to be addressed in project-specific analysis, to maintain "the value and function of key local wildlife and fish habitats that support subsistence and related resources." High Value Community use VCUs were identified in the August 26, 1996, State comments on the Revised Supplemental Draft TLMP and in the 1998 Tongass Fish and Wildlife Resource Assessment, along with rankings for salmon production and sport fishing use, deer harvest by Ketchikan residents, harvest of black and brown bears, and subsistence use. We view this information as a valuable contribution to use in determining direction of management activities that directly affect community use of fish and wildlife resources as well as species population viability.

To reiterate, some of the values documented in the Tongass Fish and Wildlife Assessment for the VCUs in the Project Area are as follows:

- VCU 572: Secondary salmon producer; top 25% of deer for Ketchikan hunters; second 25% for bears;

DGC-5 As a result of comments received in public meetings and comment letters for the Draft EIS, the Luck Lake IDT reviewed each road (existing and proposed) within the project area and updated the access management plan, incorporating these public comments and "priority use" roads brought to a collaborative stewardship meeting by Coffman Cove community members.

We held the following public meetings in 1999 to address the proposed access management plan for the Luck Lake Project Area: 09/29/1999 in Ketchikan, 11/03/1999 in Coffman Cove, and 11/04/1999 in Thorne Bay. At that time, we encouraged public participation and comment. Additionally, the Forest Service has made a concerted effort, through the Wolf Assessment Management Team, to incorporate interagency concerns regarding road closures. Access management in the Luck Lake Project Area was discussed during the interagency team meetings on 08/26/1999 and 09/16/1999.

Please refer to Chapter 3, Transportation section of this Final EIS and the Record of Decision for a more detailed description of the final Access Management Plan.

DGC-6 The Forest Service has initiated development of a formal Wolf Habitat Management Program that incorporates recommendations and analyses of land and wildlife managers from ADF&G, USFWS, and the Forest Service. The resulting interagency, interdisciplinary team has met four times (7/12/99, 8/18/99, 9/16/99, and 10/15/99) and is in the process of analyzing wolf habitat needs and developing a written assessment and Wolf Habitat Management Plan.

In his May 11, 1999 letter "Implementation of the Tongass Land Management Plan", Acting Forest Supervisor James W. Bartelme clarifies the direction for implementing the Alexander Archipelago Wolf Standard and Guideline. He identifies that the Standard and Guideline contains a series of sequential steps to be taken prior to applying the open road density of 0.7 miles or less.

Step 1 is specified in the beginning of the Standard and Guide where it states: "Where wolf mortality concerns have been identified, develop and implement a Wolf Habitat Management Program." This Program is to look at harvest levels as well as road access management. The Standard and Guide states further " To assist in managing wolf mortality rates to within sustainable levels, integrate the Wolf Habitat Management Program (including road access management) with season and harvest limit proposals submitted to Federal and State Boards."

Step 2 is to determine the cause of wolf mortality. The Standard and Guide further goes on to state; "Where road access has been determined, through the analysis, to significantly contribute to wolf mortality, implement effective road closures to reduce mortality."

Therefore, while the Standard and Guideline as modified is now a "standard", it applies after all the proceeding steps have been completed.

Currently, not all of the steps have been completed and the Forest Service is not under obligation to meet an open road density level of 0.7 miles per square miles or less for wolves. However, please note that the road access restrictions, as implemented in the access management plan (Selected Alternative), will result in an open road density of 0.67 miles/square mile in the Luck Lake Project Area.

Luck Lake Timber Sale Final Finding 12 June 25, 1999

DGC-9
- VCU 581: Primary sport fish producer; secondary salmon producer; second 25% of deer for Ketchikan hunters (30 deer/year on average); second 25% for bears (56 bears harvested from 1985 to 1994);
- VCU 582: Third 25% of deer for Ketchikan hunters;
- VCU 583: Secondary salmon producer; third 25% of deer for Ketchikan hunters; second 25% for bears.

All of these VCUs also are ranked from moderate to high for Sensitivity to Disturbance of subsistence use areas for communities in Southeast Alaska. Additional concerns are detailed in our review of the Subsistence Analysis of the DEIS.

Fisheries Concerns:

DGC-10 The Fisheries Resources section of Chapter 3 discusses concerns for sport fishing violations in the Luck Lake drainage, specifically referencing concerns for an apparent population decline of steelhead trout in the watershed. In March 1999, the ADF&G Sport Fish Division issued an order closing sport fishing in the Luck Lake drainage (including Luck Creek and its tributaries, Luck Lake and its tributaries, and Eagle Creek and its tributaries) through June 15, 1999. The closure responded to a documented, substantial decline of the steelhead spawning population in the Luck Lake drainage, as well as evidence of illegal use of bait. The population will be monitored closely to determine future harvest regulations. Although illegal fishing is a component in the decline, habitat degradation has undoubtedly played a large part, and we remain very concerned about additional timber harvest in this area.

DGC-11 ADFG/USFS MOU - Supplemental MOU No. 1 between ADF&G and the FS for Fish Habitat and Passage provides a mechanism (Notice of Instream Activity; Section B.4.) for review of "near-final" plans and specifications for projects post-ROD. However, Section B.2. of the Supplemental MOU specifies that the FS shall "Provide early notification to, and opportunity for involvement by, ADF&G in planning instream activities in fish streams during the NEPA phases of project planning." Section B.3. directs that the FS shall "Seek the preliminary recommendations of ADF&G early in the planning process before design choices are made (e.g., culvert versus bridge, crossing location, size of structure, etc.)." Early review at the DEIS stage (or earlier) could result in fewer impacts to fish habitat and smoother application of the review provisions of the MOU.

Information Needs:

DGC-12 The upper portion of the unit cards appear to be structured to provide quick reference to important information, including the number of streams by class, mass movement index information and high-value habitat; but only the some of the categories were filled in. This quick reference area would be very useful if it were complete.

DGC-13 DFG scoping comments requested a number of items that were not included in the DEIS, including a list of any units considered for the Luck Lake sales that were part of the original

Response to Alaska Division of Governmental Coordination

DGC-7 Refer to responses FWS-4 and DGC-6.

DGC-8 Refer to response ACMP-8.

DGC-9 The Forest Service maintains its position that Community Use Areas were appropriately considered at the Forest Plan level: the allocation of land use designations included consideration of Community Use Areas. As stated in Chapter 1 of the Final EIS, we do not consider the issue Community Use Areas significant, as their analysis is outside the scope of the Luck Lake project. The 1999 Forest Plan Record of Decision added a standard and guideline to extend the timber harvest rotation from 100 to 200 years in 42 Wildlife Analysis Areas where deer habitat capability concerns exist, in part to mitigate effects that increased numbers of subsistence and non-subsistence users will have on wildlife resources. All WAA's within the Luck Lake Project Area fall under the 200-year rotation standard and guideline.

DGC-10 While some fish habitat has been impacted in the Project Area due to past timber harvest activities, factors other than timber harvest have contributed to the decline of fish populations as well. Oceanographic conditions, ocean survival, commercial fish harvest and bycatch, sportfish harvest, and subsistence harvest all reduce fish populations prior to fish reaching their natal stream.

The recent emergency closure on the Luck Lake drainage was due to a declining trend in steelhead returning to the stream system and numerous sportfish violations, mainly the illegal keeping of fish less than 36 inches and the illegal use of bait. As stated in the Luck Lake Draft EIS, steelhead populations have been declining throughout Southeast Alaska.

Forest Plan standards and guidelines (S&G's), BMP's, and site-specific mitigation have been used to avoid or minimize adverse effects to fisheries resources. No modifications to Forest Plan S&G's have been proposed for the Luck Lake Project Area. Riparian S&G's were specifically developed through a collaborative effort involving lead watershed and fisheries scientists from Federal (management and research) and State (ADF&G, ADEC) agencies. The Riparian S&G's place wider buffers on fish-bearing streams than previously required and add buffer protection on non-fish bearing streams (generally headwater streams) greater than five feet wide. Class I, II, and III streams receive not only a riparian management area buffer, but also a reasonable assurance of windfirmness buffer. Only the smallest streams (Class IV, generally 1-5 ft wide) will not have streamside trees retained. These streams require at least partial suspension over the streamcourse, with felling and yarding away from the streamcourse where practicable. No yarding up or down the Class IV streamcourse is allowed.

DGC-11 Planning efforts for the Luck Lake Project Area began prior to the signed Supplemental MOU No. 1 agreement between ADF&G and the Forest Service. However, we are making every effort to improve both internal Forest Service communication and external collaborative efforts with ADF&G and meet the agreements set forth in the MOU for early notification. Forest Service personnel now notify ADF&G Habitat biologists as soon as information is known concerning instream activities in fish streams.

DGC-12 We revised and completed the quick reference header of each unit card for the Selected Alternative. See Appendix 2 of the Record of Decision to view the cards.

DGC-13 No units from the Central Prince of Wales Final EIS Record of Decision unit pool have been carried over to the Luck Lake project.

DGC-13 unit pool for the CPOW sale, with explanations of why those units were not offered in the selected alternative for the CPOW sale. DFG also requested an analysis of the economic value of fish and wildlife to fishing, hunting, and tourism. This analysis should include dollar value

DGC-14 estimates from tourism, fishing, subsistence, and other activities on National Forest lands within the Project Area, for comparison with economic analysis of economics of the proposed timber sale.

<u>Documentation of the Analyses for Allowing Harvest on Slopes Greater than 72 Percent</u>: TLMP standard and guideline S&W112.I.A.5 states *At the Forest Plan level, slope gradients of 72% or more are removed from the tentatively suitable timber base due to high risk of soil mass movement and accelerated erosion of class IV channel systems. At the project planning level, the Forest Supervisor or District Ranger may approve timber harvest on slopes of 72% or more on a case-by-case basis, based on the results of an on-site analysis of slope and class IV channel stability and an assessment of potential impacts of accelerated erosion on downslope and downstream fish habitat, other beneficial uses of water, and other resources.*

According to the DEIS (page 3-49), the amount of harvesting proposed on slopes greater than 72 percent for the Luck Lake project ranges from 16 acres to 50 acres, depending on alternative. The DEIS indicates that on-site analyses were completed by a soil scientist within the ten units where this harvesting is proposed, however, no documentation of those analyses is presented other than the statement that these areas have low landslide potential. According to

DGC-15 the TPIT clarification on this issue, *To document the analysis for allowing the harvest the following Checklist should be used:*

Steepness:
Dissection:
Parent Material:
Drainage:
Potential impacts on downstream beneficial uses:

If the analysis is undertaken prior to the signing of the ROD, then the approval (if approved) should be located in the ROD and FEIS. If the information is not available prior to the signing of the NEPA document, then it should be located in the Change Analysis (documentation of changes made between the ROD and on-the-ground activities). Although this harvesting has yet to be approved, the analyses have already been completed and, therefore, the results should have been documented in the DEIS. However, since they were not, the analyses should be summarized in the FEIS.

ANILCA §810 Subsistence Issues:

DGC-16 ADF&G is quite concerned with the subsistence analysis included in the DEIS. Because only Coffman Cove is documented to obtain more than 75 percent of its deer from WAA 1420, the analysis concludes that only Coffman Cove has the potential to be significantly affected by declines in availability of deer for subsistence use. The analysis tentatively concludes "that no

Response to Alaska Division of Governmental Coordination

DGC-14 These economic values identified are best addressed at a much larger scale than the project level. The Forest Plan addressed this issue when it allocated the Forest to a variety of land use designations (LUD's), established goals and objectives for managing the Forest, and identified desired future conditions for each LUD. In addition, the Forest Plan Final EIS includes a comprehensive analysis of the economic and social environment in Southeast Alaska, the Tongass National Forest, and the communities within these areas (Chapter 3, Economic and Social Environment section). The Forest Plan incorporated these analyses into the LUD's and standards and guidelines used to design and implement projects. The Luck Lake project is designed to implement the Forest Plan, and tiers to the analysis in the Forest Plan Final EIS.

Please note that, while the Forest Service is required to complete a Financial Efficiency analysis for each project, economic efficiency analyses are not required (see FSH 2409.18, 13). Financial Efficiency analyses compare the direct expenditures with estimated financial revenues of proposed timber sales (see Luck Lake Final EIS, Chapter 3, Silviculture and Timber section). The Forest Service is not required to quantify the non-market benefits and costs associated with every timber sale. However, the Forest Service is required to "insure that unquantified environmental amenities and values [are] given appropriate consideration in decision making along with economic and technical considerations" (42 USC 4332(2)(B)). Chapter 3 of the Luck Lake Final EIS analyzes the potential effects of the project on "unquantified environmental amenities and values" such as fisheries resources, recreation, scenery, soil resources, social concerns, subsistence resources, water resources, and wildlife.

DGC-15 Refer to response EPA-2.

DGC-16 Please see the response to FWS-6 in regard to a general discussion of restrictions to subsistence deer harvest. The above analysis can be carried one step further by subtracting the influence of non-rural hunters from the deer habitat capability estimate. During 1997, 26% of the hunters in WAA 1420 were non-rural. Those non-rural hunters took 20% of the deer legally harvest from WAA 1420. Their hunting effort in the area represented 34% of the total days hunted by all hunters. Based on the USFS deer habitat capability model, non-rural hunters took 9% of the available deer population in the Project Area. If non-rural hunters were eliminated from the hunt in 1997, legal deer harvested from WAA 1420 would have still far exceeded the 10% assumed sustainable harvest (223 deer out of an estimated 634 deer). Furthermore, in 1998, non-rural hunters accounted for 36% of the hunters in WAA 1420, took 37% of the legal harvest of deer, and hunted only 22% of the total days.

Non-rural deer hunter take alone may approach the theoretical limits of sustainability in WAA 1420. Restrictions on deer harvest by non-rural hunters may be necessary at some time in the future.

significant restrictions on any subsistence resource within the Project Area, from past, current and reasonably foreseeable future actions, will occur."

In 1996, ADF&G developed fish and wildlife rankings within watershed units (VCUs) to better understand the relative resource values of these specific areas throughout Southeast Alaska. The ranking process allowed the Division of Subsistence to systematically organize data to better examine impacts from forest and timber-related activities. The rankings were used to help recommend protection status for the highest valued areas of Southeast Alaska and, specifically, within the Tongass National Forest. The subsistence rankings are also important reference points for residents of Southeast Alaska concerned with the impact of the forest and non-forest land activities on their subsistence uses.

This methodology was developed through recent work with land management planners. The Division of Subsistence worked with FS planners in the Chatham Area to develop an objective method to rank areas according to their subsistence Sensitivity to Disturbance. This ranking was intended to identify areas where resource development would have a greater (or lesser) impact on local subsistence uses. Between 1992 and 1995, subsistence rankings were developed for harvest units included in the Northwest Baranof plan. This successful effort provided a model for ranking the subsistence Sensitivity to Disturbance for VCUs throughout Southeast Alaska.

DGC-16

The communities of Coffman Cove, Hollis, Craig, and Klawock depend upon several VCUs in WAA 1420 for their subsistence harvest of deer. Coffman Cove relies upon WAA 1420, specifically VCU 572, for deer. Hollis also relies upon VCU 572 for deer. VCU 572 received a ranking of 5, the highest ranking for Sensitivity to Disturbance for both these communities. Craig relies upon VCUs 581 and 582 for deer. These VCUs received Sensitivity to Disturbance rankings of 4 and 3 for the community of Craig. Klawock relies upon VCUs 581, 582, and 583 for deer. These VCUs received Sensitivity to Disturbance rankings of 3, 2 and 2 for Klawock residents.

Although Hollis, Craig, and Klawock may not depend upon WAA 1420 for the majority of their deer, this WAA does supply these communities with a significant portion of their deer. Residents of Thorne Bay, Hydaburg, and Meyers Chuck also use WAA 1420 for subsistence deer harvest.

The conclusion that no significant restrictions on any subsistence resources are likely to occur is not supported by projected declines in deer habitat capability within the Project Area. According to the Wildlife section of the DEIS (page 3-77), "WAA 1420 has had the greatest decline in deer habitat capability (55 percent of the 1954 capability remaining) *of any WAA within the Tongass*"(emphasis added). Looking at the cumulative effects, the DEIS states that by 2054, assuming all suitable timber lands are harvested, habitat capability for deer would decline a further 30 percent from the current level, for a cumulative reduction of 58 percent from the 1954 condition. The expected decline in availability of deer is also recognized in the 1999 ROD, which added the extended rotation S&G to "improve subsistence opportunities" and to "address projected deer habitat capability declines."

Under the action alternatives proposed in the Luck Lake Project, deer habitat capability would drop to about 11 per square mile (page 3-81). By 2054, deer density would drop to about 8 deer per square mile. To put this into a broader perspective, 13 deer per square mile is the recommended minimum density level needed to provide adequate prey for wolves.

The Subsistence section of Appendix A states that for the Ketchikan Area, "harvesting...to meet market demand, would indicate a level of impact to all subsistence use areas. However, the most significant impacts on subsistence deer habitat would not occur until 20 to 30 years after timber harvest when the second-growth canopy closes. When those impacts to subsistence deer habitat are viewed from a reference point 20 years in the future, the particular importance of which areas are scheduled for harvest during a 5-year period appears to be minor." In a later paragraph, it states that "All (Forest Plan) alternatives should be able to provide habitat capability for deer hunted by Coffman Cove residents. In the long term, projected deer harvest for all rural hunters and all hunters exceed 10 percent of capability. At some point, a restriction in hunting may be necessary (Forest Plan FEIS, page 3-536)." This discussion indicates that non-development LUDs on Prince of Wales are expected to provide for the subsistence deer harvest of Coffman Cove residents.

DGC-16

On the basis of the information provided in the DEIS, we do not concur with the finding of no significant restriction of subsistence resources. We do not believe it was appropriate to restrict the analysis to Coffman Cove, because the reliance by this and other communities on WAA 1420 will only grow with time and as more areas reach the closed-canopy state. The area was also evaluated under the CPOW EIS, which concluded that there is a significant possibility of a significant restriction of the subsistence use of deer in WAA 1420 by residents of Coffman Cove as well as residents of Hollis, Hydaburg, and Klawock. Habitat conditions have not improved since that time. If the reason it doesn't matter which area is harvested first is that all areas will most likely experience a restriction in use, we do not believe it follows logically that there will be no subsistence restrictions in whichever area is harvested first.

Nearly all timber sales on Prince of Wales have concluded that there may be a significant reduction in subsistence opportunities for deer and other species. As habitat carrying capacity declines and the number of deer available for harvest decreases, it is likely that non-subsistence hunters will be excluded from all or portions of Prince of Wales Island to ensure that deer will be available for subsistence users. As part of its subsistence analysis, we request that the FEIS include a discussion of the likelihood and the predicted timing of a restriction of non-subsistence hunters from the Project Area and other areas of Prince of Wales Island. This issue is of particular significance to hunters from Ketchikan.

City of Coffman Cove. PHONE NO. : 907+329+2212 Apr. 27 1999 05:02PM P2

Luck Doc No 232e1
File Desig D4b

CITY OF COFFMAN COVE
RESOLUTION 99-18
LUCK LAKE E.I.S.

A RESOLUTION BY THE COFFMAN COVE CITY COUNCIL IN SUPPORT OF ALTERNATIVE THREE FOR THE LUCK LAKE E.I.S.

WHEREAS, Alternative three maximizes the contribution to the timber products industry.

WHEREAS, Alternative three provides the most economically efficient timber sales.

WHEREAS, Alternative three will provide a diversity of opportunities for resource uses that contribute to the local and regional economies of
CC-1 Southeast Alaska.

WHEREAS, Coffman Cove residents have a real and immediate need for local jobs to ease the transition from a KPC dependant community towards an economically diverse community.

WHEREAS, Alternative three's volume is sufficient to offer more and smaller sales as to meet the needs of different types of purchasers.

NOW THEREFORE BE IT RESOLVED that the Coffman Cove City Council supports Alternative Three to the Luck Lake E.I.S.

PASSED AND APPROVED by the Coffman Cove City Council this 22nd day of April 1999 by a vote of 7 to 0.

Pat McDonald

Pat McDonald, Mayor

Attest

Vanessa Rodriguez

Vanessa Rodriguez, City Clerk

Response to the City of Coffman Cove

CC-1 We have noted your comments and recommendations supporting Alternative 3 of the Luck Lake EIS. The Selected Alternative modifies Alternative 3, excluding three units within the Chum Creek watershed (572-409, 572-410, and 572-420). Please refer to the Luck Lake Record of Decision for more information on the Selected Alternative.

Alaska Forest Association, Inc.

111 STEDMAN SUITE 200
KETCHIKAN, ALASKA 99901-6599
Phone 907-225-6114
FAX 907-225-5920

May 3, 1999

Tom Ford
Thorne Bay Ranger District
PO Box 19001
Thorne Bay, AK 99919

Luck Doc No 242
File Desig D4b

VIA FACSIMILE AND U.S. MAIL

RE: Luck Lake Timber Sales DEIS

This letter is Alaska Forest Association's (AFA) response to the Luck Lake Timber Sales Draft Environmental Impact Statement (DEIS), Tongass National Forest. AFA has approximately 100 members and 200 associate members throughout Alaska. AFA, its members, their employees and the timber dependent communities of Southeast Alaska depend on the Forest Service (FS) to provide economic timber sales of sufficient volume to meet the needs of the Southeast Alaska timber industry.

AFA has reviewed the Luck Lake DEIS published and distributed in March 1999. AFA supports the Luck Lake project and looks forward to the successful implementation of timber sales that help meet all the goals set forth in the Tongass Land Management Plan (TLMP), including production of sufficient timber to meet market demand.

AFA supports the "Purpose and Need" statement for the Luck Lake Timber Sales project (DEIS, pages 1-2 through 1-5), particularly the forest-wide goals and objectives listed at the bottom of page 1-2 and the top of page 1-3. Number 1 is particularly important in requiring the management of the timber resource to provide for timber harvest "on an even-flow, long-term sustained yield basis **and in an economically efficient manner**" (emphasis added). Timber sale economics are as critical to a successful timber sale program as is adequate volume offered.

AFA-1 AFA supports Alternative 3 of the Luck Lake Timber Sales DEIS with some modifications (see below). This alternative provides TLMP-required environmental mitigation as well as what appear to be economic timber sales. Multiple use considerations are adequately addressed in the Luck Lake DEIS Alternatives 2 - 6. Wildlife, fisheries, subsistence, cultural, and recreational concerns are minimized by mitigation efforts obvious in all alternatives proposed by the DEIS.

AFA-2 As a general matter, AFA believes that before the Forest Service can stabilize its timber sale program and meet the needs of the timber industry in Southeast Alaska, it needs to re-evaluate its timber demand analysis. The interpretation of market demand contained in *Timber Products Outputs and Timber Harvests in Alaska: projections for 1997-2010*, by David Brooks and Richard Haynes is

AFA Comments on Luck Lake Project
May 3, 1999

Page 1

SERVING ALASKA'S FOREST INDUSTRY

Response to Alaska Forest Association, Inc.

AFA-1 We have noted your comments and recommendations supporting a modified version of Alternative 3. The Selected Alternative modifies Alternative 3, excluding three units within the Chum Creek watershed (572-409, 572-410, and 572-420). Please refer to the Luck Lake Record of Decision for more information on the Selected Alternative.

AFA-2 We have noted your comments and recommendations to re-evaluate the Tongass National Forest's timber demand analysis. Please refer to Luck Lake Final EIS, Appendix A, for more information

AFA-2 leading to insufficient and uneconomic timber sales, creating a program which is at cross purposes with the agency's often stated goal of encouraging the growth of a reconfigured timber industry in Region 10. While the demand analysis in TLMP is not directly addressed at the project level, it is important to note that every board foot of volume made available at the project level is important to the timber industry since the only real constraint on industry's ability to develop new markets for Alaska sawn products is supply.

Luck Lake Timber Sales are needed to provide pipeline volume for Alaska's timber industry

AFA-3 The Luck Lake Timber Sales volume is an important part of the sales program proposed by the Forest Service to address the needs of the timber industry in Alaska and satisfy the requirements of TTRA, §101. The FS, in TLMP, relied on the 1997 Brooks & Haynes report, mentioned above. AFA believes the Brooks & Haynes report to be deficient in its analysis of the present and future demand for Tongass timber. The FS should acknowledge the timber industry's needs and attempt to provide the maximum economically feasible volume from the Luck Lake project. The following information should be noted and incorporated into the FEIS for the Luck Lake Timber Sales Project:

- the current normal operating capacity of Southeast Alaska sawmills is 355 MMBF, and the manufacturing facilities are presently operating at less than 50% of normal operating capacity;
- in the 1997 demand analysis update, Brooks and Haynes gave three scenarios ranging from 133 MMBF to156 MMBF. All these scenarios are well below the current normal operating mill capacity;
- the Forest Service should consider the potential for changing markets and an expanding timber industry when calculating timber demand from the Tongass; and
- the Forest Service is in direct control of the timber supply needed by the domestic processing timber industry in Southeast Alaska.

AFA-4 The FS should not only acknowledge the importance of a predictable timber sale program in maintaining a viable forest products industry in Southeast Alaska, it should also consider the impact an unstable, unpredictable and/or uneconomic supply has on the timber industry. The lack of a stable timber supply in Southeast Alaska will prevent the timber industry from making the necessary investments to remain competitive in the marketplace.

AFA-5 Economic viability for the Luck Lake Timber Sales can be maximized by designing harvest units around high volume and high quality stands. Furthermore, the Alaska Forest Association recommends that the FS consider the following issues in finalizing the Luck Lake Timber Sales Project:

1. The FS should reconsider the proposal to use a partial cut harvest method on all units in the selected alternative. Clearcuts with reserves would increase the total volume available and improve overall sale economics while still meeting TLMP standards. A clearcut prescription would also increase opportunities to manipulate species composition for future entry.

AFA Comments on Luck Lake Project
May 3, 1999

Page 2

Response to Alaska Forest Association, Inc.

AFA-3 We have noted your comments on timber supply and your recommendation to incorporate them into the Final EIS. Appendix A of the Final EIS includes the latest information available on market demand for Southeast Alaska. The role of the Forest Service relating to control of the domestic processing supply for all of Southeast Alaska is an issue outside the scope of this project.

AFA-4 Appendix A of the Final EIS includes a 10-year sale schedule that has been revised in conjunction with the 1999 Forest Plan Record of Decision. Further analysis of the timber supply for all of Southeast Alaska is beyond the scope of this project

AFA-5 Clearcuts with reserves would increase the total sale volume available and improve overall sale economics, however, under the Forest Plan, marten and goshawk standards and guidelines limit clearcutting or group selections to 2-acre openings or less. This type of cutting is reserved for downhill yarding configurations where partial cutting is not feasible.

AFA-5 Finally, a clearcut prescription should be consistently applied in any units where the hemlock is suffering from moderate to high dwarf mistletoe infestations.

AFA-6 2. Where TLMP S&Gs require structure to be left in a unit (marten standards, for example), the Forest Service should meet the retention requirements by leaving unmerchantable and low value timber to the extent feasible.

AFA-7 3. The AFA notes with approval that recovery per mile is estimated at 2.8 MMBF in the preferred alternative. It appears that the FS has carefully considered the economic impact of high cost roadbuilding into certain units and designated helicopter harvest on them to keep construction costs to a minimum. The AFA approves of such considerations and urges the FS to weigh carefully the cost differentials between cable yarding and helicopter yarding and designate the most cost effective method in each case. Keeping helicopter turn distances to a minimum by using existing roads for landing areas is an important factor. The FS should also consider using temporary road standards or the 299 Road Standard as often as feasible to further minimize construction costs. This is especially appropriate in areas where the FS intends to close roads after harvest.

AFA-8 4. The AFA notes with approval that 4.3 MMBF is designated for harvest by running skyline in the preferred alternative. The FS should examine units carefully for opportunities to increase the use of a running skyline system to further improve sale economics.

AFA-9 5. The plan to offer the Luck Lake volume in 15 sales with an average size of 87 MBF is of concern to the AFA. While it is important to offer small sales with minimal roadbuilding as part of the project to satisfy the needs of the small and very small operators on Prince of Wales Island, it is equally important that the Luck Lake project provide some volume for the medium size operators in Southeast Alaska. Economies of scale are important in meeting the needs of these operators and in ensuring that the offerings from the project are economically feasible for the larger purchasers. AFA recommends that the FS offer at least one sale from Luck Lake in the 4 - 6 MMBF range and one in the 2 -3 MMBF range.

AFA-10 6. The AFA notes that the changes in the small OGRs in VCUs 581 and 582 appear to mainly involve incorporating the beach fringe into the OGR. This is an appropriate means to ensure acreage compliance with TLMP. The AFA urges the Forest Service to avoid any further increases in or amendments to these two small OGRs.

The Alaska Forest Association appreciates the opportunity to participate in the planning of the Luck Lake Timber Sales Project. Please contact me at (907) 225-6114 if you have any questions concerning these comments.

Sincerely,

Jack E. Phelps
Executive Director

AFA Comments on Luck Lake Project
May 3, 1999

Page 3

Response to Alaska Forest Association, Inc.

AFA-6 We prescribe meeting a portion of the stand retention requirements by leaving low value or cull trees and have implemented this practice in most of our silvicultural prescriptions and timber sale contract specifications.

AFA-7 Economic feasibility is a high priority on this project. We used a break-even analysis to compare road-building and conventional yarding costs with helicopter yarding costs. We use the computer software program Helipace to help determine helicopter yarding costs for the analysis. We chose the most economical method of harvest that would meet resource objectives for each alternative. In addition, many of the roads associated with this project will be built as composite roads where terrain and other resources will allow such construction.

AFA-8 We are directed to utilize the most cost effective logging system that will meet management objectives for each unit, starting at the planning level and continuing through implementation, including the appraisal process. Refer to response AFA-7.

AFA-9 The Forest Service is committed to providing a range of sale sizes to potential timber purchasers. We agree that this project needs to help satisfy the needs of not only small operators located on Prince of Wales Island, but medium sized operators as well. The final number of sales and sizes will be developed using sale economics as a primary factor of consideration.

AFA-10 We have noted your comments and recommendations regarding the Old-growth Reserves (OGR's) in VCU's 581 and 582. The Selected Alternative incorporates the OGR proposal identified for Alternatives 2 through 5 of the Luck Lake Final EIS.

Luck Doc No 237
File Desig D4b

RECEIVED
APR 19 1999
By____

April 13, 1999

Steve Kimball
Attn: Luck Lake EIS
POB 19001
Thorne Bay, Ak. 99919

Mr. Kimball:

The following are the comments of the Cascadia Wildlands Project (CWP) on the Luck Lake Timber Sales DEIS:

Initially, I would like to express my great frustration at the apparent intent of the Forest Service to sacrifice the forests of Prince of Wales island to the timber industry. US taxpayers, local subsistence users, and resident wildlife are all losers in this endeavor.

The Thorne Bay ranger district is under no legal, moral or political obligation to continue along this path.

In the way of specific comments —

CWP-1 • There is no "need" for rawtimber from the project area. In fact, the demand for Tongass timber is at a historic low. This is no time to be aggressive about timber production.

CWP-2 • The GIS data used by the Forest Service is not habitat-based, and must not be used out of its context to draw conclusions about available critter habitat. Furthermore,

p. 1

Response to Cascadia Wildlands Project

CWP-1 The Luck Lake project responds to a number of goals and objectives identified in the Forest Plan, one of which is to provide a timber supply sufficient to meet the annual and planning cycle market demands for Tongass National Forest timber. Others include providing resource production opportunities and employment for local communities (pages 1-2 to 1-5). Timber demand tends to be dynamic, with prices fluctuating up and down in response to local, regional, National, and international market conditions. The bid prices for sales from this project will be the best indicator of market demand. If there is no demand, the sales will not be purchased. If not purchased, timber within these sales will not be harvested. See also Luck Lake Final EIS, Appendix A.

CWP-2 Interagency biologists designed the habitat capability models, used by the Forest Service in the Alaska Region. The purpose of the models is to assess relative habitat capability differences and impacts of change to habitats as a result of project specific alternatives (Suring 1991). The models use habitat variables such as forest overstory type, volume class, landscape type, and physiographic characteristics, which are important components of wildlife habitat. Habitat variables, such as volume class and elevation, have been assessed by researchers and were correlated with key wildlife habitat. Site specific data was gathered extensively within the Project Area, this data was used to update the GIS layers used to run habitat models.

CWP-2

NEPA explicitly requires full disclosure of such gaps in knowledge in an EIS. NEPA also requires high-quality data. In order to fulfill that mandate, the Forest Service should use a habitat-based inventory to draw its' conclusions regarding habitat availability.

CWP-3

• On page 3-7 it is mistakenly asserted that there is no "viability" requirement at the project level. CWP would contest that assertion, and would like to know the legal basis on which it was drawn.

CWP-4

A similar mistake consistently made throughout this document is the notion that the Forest Plan FEIS fulfills the requirement for cumulative effects analysis. NEPA applies to specific EIS's and forest plans. This has consistently been the courts' interpretation.

CWP-5

• Page 3-10 says that 10-30% "of each unit" will be retained in order to meet Marten and goshawk S&G's. That would be a violation of the Forest Plan, which requires that 30% canopy-cover must be retained. Harvesting 70% of the trees in a stand with 40% canopy cover would result in a stand with about 12% canopy cover. The Forest Plan requires that 30% canopy cover remain post-harvest.

p. 2

Response to Cascadia Wildlands Project

CWP-3 The legal basis for the level at which viability is to be maintained originates from legislation and federal regulations guiding Forest Service management policies. Regulations promulgated by the Secretary of Agriculture in order to implement the National Forest Management Act (NFMA) specify that "Fish and wildlife shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area" (36 CFR 219.19). The Tongass National Forest is the "Planning Area" for defining viable populations under the Forest Plan, as stated in the FEIS (USDA 1997). Under the Forest Plan, the individual project areas are not expected to independently maintain viable populations, but only to contribute to and not cause a decline of overall viable populations for the province (USDA 1992).

CWP-4 Refer to response EPA-9

CWP-5 We revised the Final EIS (page 3-10) to include a more comprehensive discussion of the retention requirements within the project area.

CWP-6

- Please undergo a more extensive analysis of the cumulative effects of this project when combined with the effects of adjacent projects (eg. Staney Creek, Control Lake, state harvest, etc.)

CWP-7

- The DEIS is mistaken on page 3-12 when it says that the project area will contain 44% of the historical level of productive old-growth. If all of the productive old-growth is harvested on a 100-year rotation (as is suggested), that leaves 0% in 2054. It takes about 300 years for a harvested stand to return to the old-growth stage.

CWP-8

- What would be the impact of moving the old-growth habitat reserve in VCU 572 from its current unroaded position to a roaded one?

CWP-9

- It is inappropriate to include beach-fringe as part of an old-growth habitat reserve.

CWP-10

- Please include a map (or maps) in the FEIS that shows topographic features, ~~has~~ has names of creeks and lakes, ~~and~~ identifies mountains, and displays the state road corridor.

CWP-11

- CWP finds it hard to believe that there will be "no measurable effect" to fisheries. Roadbuilding and harvest on wetlands and on top of karstic systems surely will have

p. 3

Response to Cascadia Wildlands Project

CWP-6 Project specific cumulative effects analysis has been completed. Refer to response EPA-9.

CWP-7 The Draft EIS was mostly correct on page 3-12, however, further clarification is needed to explain the intent of the paragraph. The 2,752 acres of productive old growth reported for the Luck Lake Project Area are acres suitable for timber harvest. Acres of productive old growth reported in Table OG-1 for 1954 and 1998 are suitable and unsuitable acres. By the end of the timber harvest rotation (now 2154 due to the 1999 Record of Decision [USDA 1999]), 56% of all productive old growth that existed in 1954 will have been harvested. The 10,740 acres in 2154 will be comprised of productive old growth in Old Growth Habitat Reserves, beach fringe, riparian leave strips, slopes over 72%, and other productive old-growth forests unsuitable for timber harvest.

CWP-8 The old-growth reserve in VCU 572 has not been moved from its current position.

CWP-9 The boundaries of small old growth reserves are defined based on a number of criteria (see Appendix K, USDA 1997). Among those criteria is the consideration of important deer winter range, which is generally low elevation, high volume class stands of trees that often occur along the beach-fringe. Interagency teams evaluated small old growth reserve boundaries and proposed changes to incorporate more low elevation productive old growth. When mapping old growth boundaries the Forest Plan standards and guidelines instruct interdisciplinary teams to attempt to map continuous blocks of productive old growth, which may include beach habitats as contributing elements.

CWP-10 Unit and road cards display 100-foot contours, giving an indication of topographic features. The proposed State road corridor is displayed on Figure 1-2. We chose not to include maps listing the names of all creeks, lakes, and mountains in the Final EIS, as these maps were cluttered and difficult to read. We did include the names of the major creeks within the Project Area on the Alternative Maps (Chapter 2): Chum Creek, Coffman Creek, Eagle Creek and Luck Creek. The Forest Service does produce a map, the *Prince of Wales Island Road Guide*, that shows topographic features, identifies mountains and peaks, and names creeks and lakes. Individuals may purchase this map for $4.00.

CWP-11 On page 3-19, we changed the sentence "Measurable...effects to fisheries resources are not anticipated." to "Minimal effects to fisheries resources are anticipated." The 1999 Forest Plan Record of states "The standards and guidelines and other direction that the Regional Forester approved meet or exceed all of those recommendations by AFHA [Anadromous Fish Habitat Assessment]" and that these standards and guidelines, applied to all watersheds, "are sufficient to protect fish habitat and provide for sport and commercial fisheries and subsistence" (page 30). The Luck Lake Final EIS is fully consistent with the Forest Plan and incorporates this direction.

Regulation of water flow and sediment are common to both wetlands and karst. Wetlands regulate the delivery of water to stream systems and also act as filters and/or dispersers of sediment-laden water. Karst systems regulate both surface and subsurface water flow, and depending on the development of the epikarst, may or may not transport sediment.

CWP-11 some effect? How was that conclusion reached?

CWP-12 Page 3-22 indicates that some of the harvest proposed for karst lands will be removed during project layout. Impacts to karsts must be evaluated during the NEPA process. Blanket assurances that karsts will be identified and protected after a decision is reached violates the spirit, intent and letter of NEPA.

CWP-13 Units and roads inside and adjacent to the Ratz inventoried roadless area should be dropped.

CWP-14 What is the scientific basis for the conclusions reached regarding landslides in the soils section? I am concerned by the "rough estimates" and "assumptions" of the computer model. Please don't underestimate the potential for mass wasting and erosion to screw up ecosystems.

CWP-15 The DEIS fails to evaluate the impact of increased road density on wolf/deer prey dynamics. What would be the impact of increased density of closed roads?

CWP-16 Please provide a more thorough review of the consequences to subsistence. By my calculations the project area will contain

B-4

Response to Cascadia Wildlands Project

High-value wetlands have been avoided in the Project Area. The remaining wetlands on which harvest and road building could occur are forested wetlands. The high density of wetlands in the Project Area makes complete avoidance of wetlands impossible for any of the action alternatives, however we attempted to avoid or minimize adverse impacts to wetlands when locating unit boundaries and roads. In addition to applying BMP's, marten and goshawk standards and guidelines require partial harvest on all units within VCU's 572 and 581, and buffers exclude wetlands in riparian areas. These measures minimize any adverse effects to fisheries.

All high vulnerability karst has been avoided in the Project Area. The remaining karst on which harvest and road building could occur is classified as low to moderate vulnerability. This karst is typically shallow, with few caves, and moderate to well developed epikarst not open to the conduits at depth, with little opportunity to transport sediment. BMP's including partial suspension are required over karst, and at no time shall roads divert water to or from karst features. These measures minimize any adverse effects to fisheries and karst related resources.

CWP-12 We assume that you are referring to the karst and cave resources and the vulnerability assessments contained within the resource reports. Potentially adverse effects to the karst systems and caves and associated resources from timber harvest and road building include changes in hydrology, infiltration rates, sediment production, debris transport, pollutants, and introduction of organics which can lead to oxygen depletion. We have deleted all highly vulnerable karst areas including the recharge areas for these systems from consideration for harvest. Therefore, all discrete recharge features and open systems have been protected. Research suggests that the forest canopy intercepts at least 20% of the annual precipitation. Therefore, clearcutting of the forest atop the internally drained karst lands increases annual diffuse recharge by at least 20%. Partial cutting, reduced harvest unit size, logging systems that achieve at least partial suspension, and longer metering of the acres harvested per decade within a given karst watershed should lessen the effects of increased infiltration. The very limited, partial harvest proposed on moderate vulnerability karst should have little effect on the karst groundwater systems. Any previously unidentified high vulnerability karst that is discovered, either during project layout or sale implementation, will be removed from the harvest unit in accordance with Forest Plan standards and guidelines.

CWP-13 We have noted your comments and recommendations. Units inside the Ratz inventoried roadless area (#512) include 581-446, 582-402, 582-403, 582-404, 582-405, 582-406, and portions of 581-420 and 581-445. Unit 581-420, with less than four acres inside the roadless area, is the only unit from this group in the Selected Alternative. No roads will be constructed into the Ratz roadless area to access this unit, and the roadless area will remain larger than 5,000 acres.

CWP-14 The scientific basis for the prediction of landslides presented in the Soils section of the Draft EIS is a comprehensive inventory of landslides on northern Prince of Wales Island. The landslide inventory information presented in the Draft EIS is a subset of the north Prince of Wales inventory. The information used is specific to the VCU's included in the Luck Lake Project Area.

virtually no suitable deer habitat by 2054.

CWP-16 The subsistence lifestyle is an indispensible part of the cultures native to this region. The Forest Service does not have the right to sacrifice subsistence for a few temporary jobs in sawmills.

CWP-17 • goshawk surveys were insufficient in both scope and timing. A few surveys in early and late spring miss most of the season most likely to yield results.

CWP-18 Was any effort taken to identify what lives in the "small avian nest" in unit 447?

CWP-19 The unit cards reveal that a northern goshawk was seen flying over units 407, 408, and over 404 twice. Goshawks are nonmigratory and generally prefer to stay near their nests. It is a reasonable assumption, based on a sighting, that there is a goshawk nest in the area. Please look harder for the nest. Or even better, drop that clump of units from consideration altogether.

CWP-20 • Please provide some discussion of the practicality and effectiveness of mitigation measures for the northern goshawk. A mere listing of measures to be taken does not fulfill NEPA's requirement. The EIS should analyze why the Forest Service supposes that they will succeed in this circumstance.

CWP-21 • The DEIS only admits potential impacts

p. 5

Response to Cascadia Wildlands Project

CWP-15 Please see responses to FWS-4. The Forest Service excluded closed roads in its calculation of road density, however, Person et al. (1996) indicated that gate construction and removal of culverts may not be sufficient to eliminate all motorized traffic. The implications of "closed" roads not truly keeping motorized vehicles off roads, is that access for hunters and trappers may be unimpeded.

CWP-16 Refer to responses FWS-4 and DGC-16.

CWP-17 Refer to response DGC-4.

CWP-18 The species of small avian that occupied the nest found in 581-447 is unknown.

CWP-19 Refer to response DGC-4. The goshawk surveys followed the protocols identified in 1998 TPIT letter, Appendix A.

CWP-20 Extensive debate continues in the scientific literature in regard to appropriate forest management for goshawks. See Crocker-Bedford (1990), Reynolds (1989), Widen (1989), Beier and Drennan (1997), Reynolds et al. (1992), Graham et al. (1994), Bassett et al. (1994), and Iverson et al. (1996) for specific information.

Goshawk habitat management within the Forest Plan and 1999 Forest Plan Record of Decision depends primarily on extensive amounts of forest designated for permanent protection from timber harvest. Much of the Tongass National Forest is now protected from timber harvest for a variety of reasons, including large, medium, and small Old-growth Reserves for wildlife habitat, 1,000-foot beach buffers, remote recreation areas, special interest areas, and Wilderness Areas. The Forest Plan also specifies only partial harvesting (two-aged or uneven-aged harvest systems) on Prince of Wales Island within VCU's where over one-third of the productive old-growth forest has been converted to young growth. Furthermore, much of the suitable timber base of the Tongass NF has been designated for a 200-year rotation, which means that the second-growth forest will be allowed to develop into intermediate quality foraging habitat (100-200 years old) rather than being reharvested after only 120 years. The 200-year rotation will also slow the rate that old growth is being removed, which will provide more time for monitoring to verify the efficacy of the management system for goshawks. Finally, the Forest Plan requires inventories to identify goshawk nesting in proposed projects. Around goshawk nest sites the Forest Plan requires no-cut buffers of at least 100 acres of productive old-growth forest, which exhibits a vegetative structure that generally equates to the high volume timber strata.

A comparison of the systems for maintaining sufficient goshawk habitat shows that the Forest Plan system is as good or better on the whole than the systems in the scientific literature. Although the Forest Plan, when compared to three of the systems above, provides less goshawk-specific habitat protection within the home ranges of pairs found within the suitable timber base, no other system protects anywhere near as much old-growth forest. The Tongass National Forest is spending about $300,000 annually to study and monitor goshawks, and determine the efficacy of the Tongass management system for goshawks. The ongoing, long-term (since 1991) investment in study and monitoring of goshawks on the Tongass National Forest should

CWP-21 to goshawks in terms of habitat loss. However, goshawks are notoriously sensitive to disturbance, and this project would certainly be a disturbance to any critter in the area. The FEIS must disclose and analyze these impacts, especially in a sale involving so much helicopter traffic.

- I encourage you to conduct more extensive surveys for Choris Bog Orchids, especially for a sale with such an impact on wetlands.

CWP-22

- The FEIS must analyze the feasibility and effectiveness of mitigation measures for Choris Bog Orchids. For example, directional felling can get very difficult when you consider the goshawk/marten requirement of 30% canopy cover, and then add the specialized requirements of helicopter yarding.

- This project would have unacceptable impacts on Choris Bog Orchids.

CWP-23

- Page 3-69 states that the Watershed Analysis and Resources Report contain references to the scientific literature. NEPA requires that such information be included in an EIS. I don't expect that it would be an undue paperwork burden to cite the science

P.-6

Response to Cascadia Wildlands Project

demonstrate any problem with the Forest Plan for goshawks before large amounts of damage can occur to the Tongass goshawk population.

CWP-21 Adverse effects as a result of noise disturbance have been reported during early nesting in goshawks (Crocker-Bedford pers. Com); however, little scientific information exists on this subject. Once goshawks are brooding young, they become tenacious to their nest. During brooding, logging truck noise within 500m (1640 ft) of the nests did not appear to illicit behavioral response of goshawks (Grubb et al. 1998).

CWP-22 As a result of intensified efforts by Forest Service botanists to inventory sensitive plant species on the Tongass National Forest (USFS 1997, USFS 1999), widely dispersed populations of the Choris bog orchid have been found in great abundance. Because of those findings, the Alaska Regional Forester removed the Choris bog orchid from the sensitive plant species list on May 11, 1999.

CWP-23 Our citation of the Watershed Analysis is appropriate.

CWP-23 used to support findings.

- On page 3-73 the DEIS states that the cumulative effect of roads on wetlands is unknown. Let me remind you that NEPA makes specific provisions for such circumstances.
CWP-24 The Forest Service must either (A) undergo more studies to discover the missing information, or (B) explain why that study would be prohibitively expensive or difficult, and explain why the gap in knowledge is acceptable.

- What effect will this project have on the elevational migration of deer? Why is that an important issue?

- What value will partial-harvest units have for deer? Are there any studies which
CWP-25 suggest that second-growth in partial harvest units are better for deer?

- What field validation was done for the deer habitat capability model? How many deer are in the project area now?

- How effective will the proposed road closures be in protecting wolves and marten? Person
CWP-26 et al. (1996) suggest that simple closures don't work. Why are they expected to succeed in this case?

p. 7

Response to Cascadia Wildlands Project

CWP-24 The Soils, Floodplains, Wetlands and Riparian Areas Resources Report provides a more in-depth discussion of the effects of roads on wetlands and a discussion of the results of a recent study near Wrangell, Alaska. A second study addressing road interception of groundwater is currently underway on the Craig Ranger District. The effectiveness of wetland protection standards and guidelines is also a Forest Plan monitoring item, and the Tongass National Forest is currently determining the appropriate protocols for monitoring. The gap in knowledge is acceptable at this time, given past experience with road construction on wetland sites and current efforts underway. The Final EIS text has been updated to include this information.

CWP-25 Luck Lake Project will further limit elevation migration routes for deer and other wildlife species, however, a small old growth reserve was established in VCU 581 to provide for connectivity and accessibility to the large old growth reserve (Honker) to the west.

The Forest Plan standards and guidelines establish the requirement of retaining trees, in some VCU's, to retain 30% canopy closure for goshawks and marten. Those standards and guidelines were not established for the purpose of improving deer habitat. We are not aware of any published studies that suggest that second-growth or partial harvest units provide better winter habitat than unmodified forests for deer in Alaska. However, as discussed in the response to FWS-4, Kirchhoff and Thompson (1998) studied of the effects of selection harvesting on deer habitat in Southeast Alaska and concluded that removing small numbers of trees (<30/ha) distributed evenly throughout the unit (1-6 trees/0.2 ha) was most effective in maintaining deer winter range. Timber removal from harvest units with 30% retention of canopy closure prescription will exceed Kirchhoff and Thompson's (1988) recommended selection harvest regime for improving deer habitat.

The deer habitat capability model was verified by comparing deer pellet group counts (data collected by ADF&G) with population estimates generated by the model for discrete areas (Suring et al.1992). Additionally, average annual deer harvest rates from 1987 through 1989 (ADF&G 1991) were compared to model predictions for deer habitat capability for the Tongass National Forest. Based on the distribution of annual harvest rates, the analysis concluded that the deer habitat capability model may be "reasonably approximating actual populations" (Suring et al. 1992). However, the deer habitat capability model was not designed to estimate numbers of animals, nor habitat capability beyond the scope of comparing alternatives. We are therefore unable to determine the actual number of deer within the project area.

CWP-26 Refer to response to DGC-2 and CWP-15

CWP-27 The FEIS must assess the impacts of helicopter operations – both for yarding logs and transporting regen. crews. That analysis should include:
(1) impact of helicopter yarding on potential for small operators to bid on the sale;
(2) disturbance to wildlife;
(3) potential for blowdown and uprooting of leave trees (300 mph updrafts are not uncommon);
(4) identify helicopter landing areas and assess the implications of different potential flight patterns.

CWP-28 This project would have an ~~an~~ unacceptable impact on Marten.

CWP-29 This project would push road density far above Forest Plan S&Gs for wolves. It appears as though the Forest Service considers the Forest Plan's S&Gs as "general principles" which may be dispensed with at a whim. That makes a mockery of the Forest Plan process. Why were the Standards and Guidelines created if they were meant to be dismissed?

CWP-30 Why is there no analysis of wildlife corridors and habitat connectivity? Fragmentation is a serious concern in this area, and needs to be taken seriously.

p. 8

Response to Cascadia Wildlands Project

CWP-27 While helicopter yarding may preclude the ability of some potential timber purchasers to bid on a timber sale, several small timber purchasers successfully bid and performed on sales that have included helicopter yarding. This includes the sale of special forest products, where full suspension required airlifting shake and shingle bolt wood from previously logged units.

As stated in Chapter 3 of the Luck Lake Final EIS, we estimate the adverse effects of helicopter yarding on different species of wildlife to be minimal or insignificant. Although adverse effects of helicopter yarding may be slightly higher than other logging systems, the increase is almost impossible to detect and measure. Helicopter yarding has been successful Nationally, as well as in SE Alaska, with no known effects to wildlife populations.

Blowdown is always a risk in SE Alaska timber types. We assess this risk during the planning phase. We design unit configurations and silvicultural prescriptions to minimize future windthrow in high-risk blowdown areas. Stand management tools, such as edge feathering, layered edges, and placing unit boundaries against more wind firm timber types, are used as much as practicable.

Helicopter logging costs and factors are included in timber sale appraisals and timber sale contract specifications. Factors assessed for cost and included as timber sale contract specifications include the identification and development of helicopter landings, the most efficient flight path including flight times, and the elevation difference between the harvest unit and the landing to name a few. These costs are derived from the computer software program Helipace, which is used extensively in the Forest Service to analyze helicopter yarding costs.

CWP-28 Refer to response DGC-2.

CWP-29 Refer to responses FWS-4 and DGC-6.

CWP-30 The Forest Plan FEIS (1997) includes an old-growth habitat strategy that is intended to maintain well-distributed viable populations across the Tongass. It is designed to reduce fragmentation of old growth habitat and has been developed through careful analysis and integration of the best scientific information available on the subject (see Appendix N of the Final EIS, USDA Forest Service, 1997). With the establishment of old growth reserves, approximately 70% of the productive old growth, in 1997, was protected in "non-development" Land Use Designations (LUD's). The 1999 Forest Plan Record of Decision increased the percentage of protected productive old growth.

The old growth habitat strategy established large, medium, and small OGR's within a landscape framework. Connectivity between large and medium OGR's was established during the Forest Plan Revision; however, small OGR's were designed to be assessed on a project-by-project basis. Small OGR's are to be strategically placed to minimize fragmentation and establish connectivity with medium and large OGR's. Recommended changes in small OGR boundaries within the Luck Lake Project Area followed the criteria established in the Forest Plan (Appendix K, USDA Forest Service,

CWP-31 • This project would push deer populations well below levels identified in the Forest Plan. Why is this justified?

CWP-32 • What efforts were taken to find the nest of the sharp-shinned hawk in unit 440?

CWP-33 • More discussion of how the leave trees will be grouped would be helpful. The goshawk and marten Standards & Guidelines mandate leaving trees more or less uniformly scattered over the unit, while unit cards often recommend (under "timber output" and "silviculture") grouping trees as much as possible.

CWP-34 • Please be more clear in the unit cards about what the actual prescription would be. "silviculture" often recommends clearcut with reserves while "wildlife" says implement 30% canopy cover guidelines. Which recommendations are you basing the estimates of volume from?

A few unit-specific comments.

CWP-35 • Unit 404 – economic returns would appear to be marginal. Silviculture input was a recommendation for small group selection, which isn't possible while meeting goshawk/marten S&Gs.

CWP-36 • Unit 405 – Silviculture input says "Partial harvest p. 9

Response to Cascadia Wildlands Project

1997), and were designed to minimize fragmentation and maximize habitat connectivity. A map was developed to highlight the small OGR's and other non-harvestable productive old growth. This map is available in the planning record.

CWP-31 Deer habitat capability in the Luck Lake Planning area is decreased primarily because of past timber harvest. Refer to response FWS-4 for further clarification.

CWP-32 Unit 581-440 was surveyed for northern goshawks on 04/07/97, using the "overlook" survey method. This method is useful for detecting a variety of raptors and is not exclusive to northern goshawks. No sharp-shinned hawk was detected during the survey. The single sharp-shinned hawk detected by USFS silvicultural personnel was detected outside of the breeding season. Any raptor nests subsequently discovered in the process of analyzing or implementing this proposed project would be identified and protected under the standards and guidelines for Heron and Raptor Nest Protection provided in the Forest Plan (USDA 1997).

CWP-33 We have incorporated a discussion regarding the distribution of leave trees into the Luck Lake Final EIS. While the standards and guidelines indicate a desire to have leave trees evenly distributed, these same standards and guidelines recognize the advantage of grouping leave trees to enhance protection of other resources, account for unit acreage deletions, blind leads, etc. When grouping is used, 10% of the original stand structure is designed to remain between groups.

The standards and guidelines specifically provide for small selection harvest methods, i.e. group selection (less than 2 acre openings), with no additional mitigation required other than a rotation age of 200 years and no more than 25% of the unit removed in any one entry. Group selection normally identifies groups between 1 and 2 mature tree heights in width. Assuming more or less circular harvest groups, a mature tree height of 110 feet, and that the opening size is limited to 1fi mature tree heights, the resulting created opening would be less than 2 acres (1.96 acres)

CWP-34 The guidelines referred to in the wildlife section are from the Forest Plan. We clarified the silvicultural prescriptions and recommendations on unit cards to reflect the most technically correct treatment to be applied. We based volume estimates on retaining at least 30% overstory canopy closure in dominant and co-dominant trees, 16 inches DBH or greater (DBH minimums apply where such size trees are available).

CWP-35 The goshawk and marten standards and guidelines specifically provide for silvicultural openings of less than two acre, which would be the result of small group selections.

CWP-36 We clarified the silvicultural prescriptions on the unit cards for the selected alternative (Luck Lake ROD, Appendix B). Forest Plan standards and guidelines do not forbid clearcutting practices, so long as sufficient reserve trees are retained to provide an average overstory canopy cover of at least 30%. Any openings created by grouping residual trees have at least 10% of the original forest structure left between groupings. Either of these approaches will result in a two-aged stand condition.

CWP-36 to meet S&Gs is feasible using clear cut with reserves... 17 Forest Plan S&Gs expressly forbid clearcut in this area. How would it be possible to use clearcut with reserves and still maintain an average of 30% canopy cover uniformly scattered throughout the unit?

~~Estimated volume is 402.1 MBF. But when~~

CWP-37 • Unit 411 — There would appear to be concerns with regards to habitat connectivity with this unit and the associated road construction. There is a north/south riparian corridor running to Coffman Cove that would be nearly severed. Harvesting on wetlands that close to Coffman Creek is a questionable decision from a fisheries standpoint.

CWP-38 • Unit 413 — Should stay away from the karst. Low volume combined with windthrow and mistletoe make it doubtful that goshawk and marten S&Gs could be met.

CWP-39 • Unit 414 — Doesn't seem possible to meet goshawk/marten S&Gs.

CWP-40 • Unit 420 — Was any effort made to locate the den of the wolves heard near this unit?

CWP-41 • Unit 425 — How would this unit be yarded under alternative 3, which doesn't involve road construction to this area?

CWP-42 • Unit 581-404 — How is it economical to build a

P. 10

Response to Cascadia Wildlands Project

CWP-37 Biologists can recommend mitigation measures to manage above and beyond the minimum requirement specified in the Forest Plan, however, the Forest Plan does not require wildlife corridors throughout a planning area. There exists a requirement only for maintenance of connectivity between large and medium OGR's. Unit 572-411, which is not included in the Selected Alternative, would constrict, but not sever the riparian corridor.

We do not believe that harvesting 17 acres of forested wetlands is a questionable decision from a fisheries standpoint. We identified all streams in and adjacent to unit 572-411 and applied appropriate buffers (see unit card in Appendix B of the Draft EIS for a description of these buffers). The Forest Plan requires that riparian associated wetland fens be included in the buffers on specific stream channel types. The forested wetlands in this unit do not meet the criteria outlined in the Forest Plan for riparian associated wetland fens.

CWP-38 We assume you are referring to unit 572-413. There is no karst in the vicinity of unit 572-413. Initial survey of this area incorrectly identified carbonate bedrock underlying a portion of this unit. This unit is designed to meet goshawk and marten standards and guidelines.

CWP-39 Unit 572-414 is designed to meet goshawk and marten standards and guidelines.

CWP-40 The Forest Service is a major contributor to an ADF&G study of wolves on Prince of Wales Island. This radio telemetry study, which began in 1999 and is scheduled for completion in 2003, may provide valuable information on wolf packs, including locations of den sites.

CWP-41 Helicopter yarded logs will be flown to the nearest, most feasible landing located and developed on an existing road within the sale area boundary.

CWP-42 All units are analyzed for economic feasibility. While some units are more economical than others, the intent is to limit the number of units that cost more to harvest than the return in timber sale receipts.

CWP-42 road to this unit, which could only withstand a miniscule harvest while meeting S&Gs.?

CWP-43 • Unit 581-417 — Logging this unit would exceed VQOs.

CWP-44 • Unit 581-422 — Regeneration concerns, difficulty meeting goshawk/marten S&Gs, impacts to water quality and soils are all excellent reasons to drop this unit.

CWP-45 • Unit 581-423 - Logging this unit as proposed would violate VQO's, impact high-vulnerability karsts, damage waters quality and violate goshawk/marten S&Gs.

CWP-46 • Unit 581-428 — Should stay away from steep areas. Windthrow would seem to make meeting goshawk/marten S&G's prohibitively difficult.

CWP-47 • Unit 581-435 — Should give the stream buffer a wide berth or will violate stream buffer windfirmness requirements.

CWP-48 • Unit 581-446 — simply not worth the effort and money.

CWP-49 • Unit 581-447 — Soils concerns should prohibit logging this unit. What lives in the small avian nest?

CWP-50 • Unit 581-449 — Too steep to meet soil protection objectives. Should stay away from the Karsts. Leave p. 11...

Response to Cascadia Wildlands Project

CWP-43 Cumulative harvest impacts were evaluated based on a percentage of bare, harvested ground calculated within each viewshed. With proposed crown retention of 30%, the average forest visitor will notice little visible harvest effects and effects were considered negligible. Visual quality objectives (VQO's) for this unit will be met.

CWP-44 Soils and streamcourses in unit 581-422 have been investigated on the ground. Riparian buffers and soil resource protection prescriptions have been written based on site specific conditions for the express purpose of maintaining soil productivity and water quality.

CWP-45 Refer to response CWP-43.

On July 29 and 30th, karst resource specialists re-visited unit 581-423 and confirmed that areas of high vulnerability karst lie well outside the proposed harvest unit boundary. The proposed unit layout was modified to protect the watershed of a losing stream along the northeast corner of the unit and the proposed access road route was re-aligned to avoid the high vulnerability karst resources and the associated drainages. The ROD has deferred harvesting this unit due to goshawk sightings adjacent to the unit boundary. However, once the nest is found, a portion of this unit may become available for harvest. In this event, Forest Plan standards and guidelines, BMP's, and site-specific mitigation will be used to avoid or minimize adverse effects to water quality, fisheries, and karst resources.

CWP-46 A soil scientist investigated unit 581-428 and made recommendations to maintain soil productivity and protect water quality. Future windthrow is a concern in the southern tip of this unit, however the silvicultural prescription includes measures to minimize windthrow.

CWP-47 The trees left within the large V-notch adjacent to unit 581-435 are expected to be windfirm due to the deeply incised nature of the V-notch and the valley bottom landscape position. The partial-cut prescription in the rest of the unit will form the reasonable assurance of a windfirm buffer. This is not a violation of the Forest Plan stream buffer requirements.

CWP-48 We have noted your comment. Refer to response CWP-42.

CWP-49 Unit 581-447 was reconfigured to avoid slopes over 72 percent gradient. This unit is located on the shoulder slope above the steeper backslopes of unit 581-449. Partial suspension will meet soils protection requirements in unit 581-447.

The species of small avian that occupied the nest found in 581-447 is unknown.

CWP-50 We agree that there are short, steep pitches of landslide prone soils in unit 581-449. The soils input on the unit card describes locations of required leave islands, and requires full suspension in this unit. These soil protection measures, combined with the partial-cut prescription, will meet soil resource protection objectives. Karst resources were incorrectly identified with the proposed unit boundary. No karst terrain was identified in unit 581-449

CWP-50 room for windthrow to meet goshawk/marten S&G.

CWP-51 • Unit 581-453 — Risk of landslide into stream should prevent logging this unit.

CWP-52 • Unit 581-461 — Helicopter would have to fly logs too far, to make this unit economical.

CWP-53 • Unit 582-404 — Should delete S 1/2 due to karst, soil & slide concerns, and the N 1/2 barely leaves any room for harvest while meeting goshawk/marten S&G. Certainly not worth building a road.

CWP-54 • Unit 582-406 — stay away from the karst.

Thank you for thoughtfully considering these comments.

Sincerely,

Gabriel Scott
Alaska Representative
Cascadia Wildlands Project
POB 1464
Cordova, AK. 99574
(907) 424-4394

p. 12

Response to Cascadia Wildlands Project

CWP-51 Following unit reconnaissance, unit 581-453 was modified to avoid all slopes over 72 percent gradient. Given the revised unit boundary and the prescription outlined on the unit card, harvest of unit 453 is unlikely to precipitate a landslide.

CWP-52 Unit 581-461 is within one half mile of an existing road and is still considered feasible for helicopter yarding.

CWP-53 No karst terrain was identified in unit 582-404. The unit includes about one acre of slopes over 72 percent gradient along the southeast unit boundary. Most of this steep area is included in a slope-break buffer on the water quality stream, southeast of the unit. No very high MMI soils were found in unit 582-404, outside this riparian area.

CWP-54 Harvest unit 581-406 was incorrectly identified as containing karst resources. Harvest unit 581-405 did, however, contain both moderate and high vulnerability karst. The proposed harvest unit boundaries for unit 581-405 have been modified to protect the high vulnerability areas and the proposed access road alignment changed to avoid these areas.

RECEIVED
MAY 10 1999
By______

FOREST GUARDIANS

Luck-Doc No 250
File Desig D46

May 1, 1999

Steve Kimball, District Ranger
ATTN: Luck Lake EIS
USDA Forest Service
P.O. Box 19001
Thorne Bay, AK 99919

RE: Comments on Luck Lake Timber Sales draft E.I.S.

Dear Mr. Kimball,

Forest Guardians submits these comments on behalf of Forest Conservation Council (FCC). Forest Guardians and FCC are non-profit corporations with their principal offices in Santa Fe, New Mexico. A mission of both organizations is to protect and restore the native biological diversity of forests throughout the U.S. Forest Guardians and FCC together have approximately 3,000 individual and business members throughout the U.S. Many of our organizations, business members, individual members, and us use and enjoy the ecological resources of the Thorne Bay Ranger District on a regular basis for recreational, aesthetic, and scientific activities. In pursuit of these activities, our members regularly observe and enjoy the wildlife. clean water, and unmanaged forests of the Luck Lake Project Area.

FG-1 We are concerned with the adverse economic effects of the National Forest logging program. and the Forest Service's failure to quantify such effects at the project level or for the program as a whole. The logging program increases costs of water purification and filtration, decreases the value of private timberlands, unfairly competes against alternative fiber and building material businesses, increases wildfire risk, increases repair and maintenance costs for highways and public roads, and decreases the number of jobs in recreation, tourism, fisheries, and alternative forest products.

FG-2 In addition, the ecosystem service values of standing or otherwise intact forest ecosystems, especially native forests, including their value in providing clean water, mitigating floods, supporting recreation, hunting, fishing, and wildlife viewing, enhancing long term forest productivity, supplying alternative forest products, mitigating global warming, controlling agricultural pests and providing amenity values are systematically undervalued or not valued at all. For example, the Forest Service typically assigns zero economic value to "no action" alternatives in timber sale E.A.s or E.I.S.s, or no value at all. Further, the Forest Service must utilize a professional economist trained in efficiency analysis and economic impact analysis.

FG-3 The federal government has, in its possession, tools of economic analysis that enable project planners to estimate both adverse economic impacts as well as ecosystem values, and incorporate these estimates into E.A.s or E.I.S.s so that realistic comparisons between economic benefits of the various alternatives can be completed. Incorporation of such costs and benefits is essential to

1411 Second Street ▾ Santa Fe, New Mexico 87505 ▾ 505-988-9126 ▾ Facsimile 505-989-8623
www.fguardians.org ▾ swwild@fguardians.org
Printed on 100% tree-free kenaf paper

Response to Forest Guardians

FG-1 The social and economic values included in this comment are best addressed at a much larger scale than at the project level. The Forest Plan has addressed these values in great detail and incorporated them into the land use designations and standards and guidelines used to design and implement projects. Project analyses on pertinent social and economic factors have been incorporated into the Luck Lake Project. This effort complements the Forest Plan. See also response to DGC-14.

FG-2 These broad scale comments on the timber-sale program as a whole were addressed in the Forest Plan. See also response FG-1. The Luck Lake project follows Forest Service manual and handbook direction for the selection of interdisciplinary team members. While the core interdisciplinary team did not include an economist, the Luck Lake Final EIS identifies that the regional economist was consulted during planning for the project (Chapter 4).

FG-3 Ecosystem values have been analyzed in the broad context of the Forest Plan as a whole and addressed through the use of land use designations and standards and guidelines. Refer to response FG-1.

FG-3 fulfill the Forest Service's primary duty in management of Forest Service lands, namely, to maximize net public benefits.

FG-4 To adequately quantify costs associated with the Luck Lake Timber Sales, as well as the economic values of unlogged forests in the Luck Lake Project Area, the Forest Service must adopt analysis techniques, such as the Natural Resources Damage Assessment techniques the federal government already applies in the context of oil spill litigation. <u>We specifically request that the adverse external economic costs of logging in the Luck Lake Project Area, as well as ecosystem service values of standing or otherwise intact forests be estimated in the final E.I.S. for the Luck Lake Timber Sales using the latest quantitative techniques available.</u>

FG-5 Finally, the opportunity costs of the logging program, which include the value of uses forgone on areas logged plus the benefits associated with alternative uses of timber sale funds have not been evaluated on a project basis or for the logging program as a whole. In the final E.I.S. for the Luck Lake Timber Sales, the Forest Service must analyze alternative uses of the funds to be spent on this timber sale, to determine whether or not net public benefits can be maximized in other ways. <u>We specifically request consideration of an alternative that would utilize available funds for this project to support the ecological restoration component of this sale by itself, without completing the commercial sale component</u>. Such an alternative will improve ecological conditions, and leave the economic values of unlogged forests in the Luck Lake Project Area intact. Such an alternative would most likely maximize net public benefits in the Luck Lake Timber Sales.

Please keep Forest Guardians/FCC on the mailing list to receive copies of the final decision notice and E.I.S. for the Luck Lake Timber Sales.

Sincerely,

Bryan Bird

Response to Forest Guardians

FG-4 The effects of all alternatives have been documented in the Final EIS. The documented costs and benefits of each alternative are those that are key to the decision to be made. Refer to response FG 1.

FG-5 The Luck Lake Project is only one of many projects under the auspices of the 1999 modified Forest Plan, which are intended to work toward meeting the Forest Plan goals and objectives (Forest Plan page 2-4). The Luck Lake project takes place primarily within the Timber Production and Modified Landscape land use designations. The goals of Timber Production LUD include:

- promoting industrial wood production from suitable timberlands.
- providing a continuous supply of wood to meet society's needs.
- providing a supply of timber that meets the annual and plan-cycle market demand.

In addition to the first two goals listed above, the goals of Modified Landscape LUD include:

- providing a sustained yield of timber and a mix of resource activities while minimizing the visibility of developments in the foreground distance zone.
- recognizing the scenic values of suitable lands viewed from identified popular roads, trails, marine travel route, recreation sites, bays and anchorages, and.modifying timber harvest practices accordingly.

Several avenues are available for funding ecological restoration and resource improvement projects. One way is with Knutson-Vanderberg (KV) funds. KV funds are collected from timber sale receipts and are spent thin the project area to perform numerous kinds of ecological improvements. During the preparation of a timber sale, Forest Service employees develop a KV Plan based on resource needs. Resource improvement projects include: reforestation; constructing fish passage structures; thinning trees to enhance growth; seeding and fertilizing grass to prevent erosion; and habitat improvement for wildlife, fisheries and rare plants. Other sources of funding could include internal sources, such as watershed assessment related funding and external sources, such as EPA grants.

Reallocation of funds intended to plan the Luck Lake Project is beyond the scope of this analysis. Analysis of the effects of the No-action Alternative serves as a baseline against which to compare the other alternatives in the Final EIS.

MAY. -03' 99 (MON) 15:31 KPC TIMBER TEL:9072471834 P. 001

Ketchikan Pulp Company

Post Office Box 6600
Ketchikan, Alaska 99901
U.S.A.
TEL: 907/225-2151
FAX: 907/225-8260

Post-it® Fax Note 7671	Date	# of pages ▸ 3
To LUCK LAKE	From KPC	
Co./Dept. EIS	Co.	
Phone #	Phone #	
Fax #	Fax #	

May 03, 1999

Luck Doc No 249
File Desig D46

Forest Supervisor
USDA Forest Service Alaska Region
Tongass National Forest
Ketchikan Area
ATTN: Luck Lake EIS
Federal Building
Ketchikan, Alaska 99901

Thank you for the opportunity to comment on the Luck Lake DRAFT Environmental Impact Statement.

It is very hard to make any specific comments regarding this Draft EIS due to the new TLPM Record of Decision that was recently signed. I assume the Forest Service is going to try to get this EIS completed prior to October 1, when the new TLMP ROD takes effect. But with the length of time the process takes, I find it hard to believe the work will be completed with a signed EIS ROD. With this in mind, how is the new TLMP ROD going to effect the units? Will any units will be dropped? Is the area in the 200 year rotation? If so, can the units be changed from partial cuts to clearcuts to get more of the harvest now, rather than later?

KPC-1

Operating Divisions *Thorne Bay Log* *El Capitan Log* *Naukati Log* *Ketchikan Sawmill* *Annette Sawmill*

Response to Ketchikan Pulp Company

KPC-1 The Luck Lake project will continue through the planning process, with no changes resulting solely from the 1999 the Forest Plan ROD. The acting Forest Supervisor sent the interoffice memo ``Implementation of the Tongass Land Management Plan'' to Tongass Assistant Forest supervisors and District Rangers on May 11, 1999. On page 3 of this letter, he states:

> *The current ongoing projects for the first five years of the ten-year sale schedule, would affect a total of 12,862 acres within the 200-year rotations. This is well under the decadal ceiling of 28,000 acres imposed by the new ROD. Therefore, projects currently in the NEPA process within the 200 year rotations will continue through the planning process.*

No units will be dropped from the current Luck Lake unit pool. The Luck Lake project area is entirely within the 200-year rotation area. No units will be changed to clearcuts, as a traditional clearcut prescription would not meet marten and goshawk standards and guidelines.

MAY.-03'99(MON) 15:31 KPC TIMBER TEL:9072471834 P.002

In 1991, the year of the "great compromise" Tongass Timber Reform Act the timber industry was harvesting 300[1] mmbf of sawlog volume and employed 3,069[2] direct jobs. At the end of the 1998 Fiscal Year, the volume harvested has dropped to 108[3] MMBF of sawlog volume and 1,269[4] direct jobs. Critics of the Forest Service timber sale program, and the timber industry, would have people believe the entire decline is due to a decrease in market price of the finished products offered from the Tongass. The critics would tell us the approximately 400 mmbf of volume under contract by the industry is more than enough volume for the industry. Even if they Industry geared up to harvest all the volume currently under contract, where will next years volume under contract come from? The fact is the Forest Service has not offered enough marketable volume over the past several years. The 400 mmbf is not a three year supply of timber, a supply commonly called a "pipeline" of volume for the mills in Southeast Alaska. A complete pipeline would have the industry holding over 900 mmbf of timber.

KPC-2 It is vital for the Forest Service to recognize the importance of the timber industry to the health of the communities in Southeast Alaska. The Industry has played a vital part of building the infrastructure the communities depend upon for services. As recently as this winter a group that has opposed road building and logging was heard to be requesting the Forest Service plow the snow off the road on the North Prince of Wales so that supplies could be brought into the their community.

KPC-3 The Forest Service should make every effort to make economical timber sales. In the past, economics has played a back seat to other concerns on

[1] ANILCA 706(a) Table A-7
[2] ANILCA 706(a) Table A-2
[3] ANILCA 706(a) Table A-7

Response to Ketchikan Pulp Company

KPC-2 We have noted your comment regarding the importance of the timber industry to the health of communities in Southeast Alaska.

KPC-3 Economic feasibility is a high priority for this project. Alternative 3 (preferred) builds the least amount of road while retaining harvestable volume on or adjacent to the existing road system. A breakeven analysis was done on units (or groups of units) where the cost new road construction, for unit access with conventional cable yarding, was compared against helicopter yarding. We chose the most economical method of harvest that could meet the resource objectives.

the forest. This management decision is at the peal of the local communities. When the Forest Service puts valuable timber up for sale, the prices paid for the sales are higher and companies are able to make profits. Usually, some of the profits go back to the communities for community projects. People have money to invest in local businesses. The schools receive more money for education. The Forest Service earns money from the sales and the national economy is improved. KPC-3

With the removal of Purchaser's Credits, the Forest Service should look into building roads that are adequate for the removal of the timber. There is very little reason to build any specified road. Simply build temporary roads and save money. On large stream crossings, simply design the crossing so that there are control points for the installation of the structures. KPC-4

In conclusion, we would like the Forest Service to do all it can to return to its mission of providing forest products so that our communities can be healthy and happy places to raise families. KPC-5

Thank you for your consideration

Sincerely,

Kent Nicholson

Contract Manager

[4] ANILCA 706(a) Table A-2

Response to Ketchikan Pulp Company

KPC-4 Many of the roads associated with this project will be built as composite roads where terrain and other resources will allow such construction. Composite construction is required on the large stream crossings.

KPC-5 We have noted your comments and recommendations.

NATURAL RESOURCES DEFENSE COUNCIL

May 3, 1999

Via Telefax

Luck Doc No 258 el.1
File Desig D46

Steve Kimball
District Ranger
U.S. Forest Service
P.O. Box 19001
Thorne Bay, AK 99919

RE: Luck Lake DEIS

Dear Ranger Kimball:

Please accept these comments of the Natural Resources Defense Council (NRDC), Sitka Conservation Society, Sierra Club, and Tongass Conservation Society on the Draft Environmental Impact Statement (DEIS) for the Luck Lake Timber Sales.

I. Relationship of the Project to TLMP

NRDC-1 Problems with the Luck Lake project as currently proposed stem in substantial measure from, and reflect, problems with the 1997 Tongass Land and Resource Management Plan (Forest Plan or TLMP). The Luck Lake DEIS is explicit that the project responds to the 1997 TLMP. DEIS at Summary i. The undersigned groups appealed TLMP to the Chief of the Forest Service, asking for major changes. These comments rely on, tier to, and incorporate by reference those TLMP appeals.[1] Although the Under Secretary of Agriculture recently decided those appeals and amended the 1997

[1] Specifically, we incorporate Appeals No. 97-13-00-0101 (SEACC), -0094 (Hoonah Indian Assoc., et al.), -0102 (Sierra Club), -0105 (Defenders of Wildlife), -0108 (NRDC et al.), -0109 (Tongass Cave Project), -0111 (Narrows Conservation Coalition), -0112 (Sitka Conservation Society), -0113 (Prince of Wales Conservation League), -0114 (National Audubon Society), -0118 (Tongass Conservation Society), -0119 (Lynn Canal Conservation), and -0129 (Alaska Wilderness Recreation Tourism Association); intervenor comments filed by SEACC and The Wilderness Society et al. (TWS); the Request for Interim Relief for Timber Sale Projects Pending Resolution of the Tongass Land Management Plan Administrative Appeals, dated 7/31/98; and all documents attached to and/or referenced in any of the aforementioned appeal filings. Where materials and references from these TLMP appeal filings are cited in this appeal, the underlying TLMP filing is listed in brackets, as, for example: Powell et al., 1996 [NRDC TLMP Appeal]. All of these filings, with their attachments, have been provided to Region 10 in the course of the TLMP appeal proceedings, and should be readily available from the Regional Forester, but are also available from NRDC if needed. Materials that Region 10 assembled and maintained as part of its TLMP process records are denoted: [TLMP Record].

71 Stevenson Street
Suite 1825
San Francisco, CA 94105
415 777-0220
Fax 415 495-5996

6310 San Vicente Boulevard
Suite 250
Los Angeles, CA 90048
323 934-6900
Fax 323 934-1210

1200 New York Ave., N.W.
Suite 400
Washington, DC 20005
202 289-6868
Fax 202 289-1060

40 West 20th Street
New York, NY 10011
212 727-2700
Fax 212 727-1773

www.nrdc.org

Response to Natural Resources Defense Council

NRDC-1 The Luck Lake project is consistent with the Forest Plan. Deliberations regarding the Forest Plan are outside the scope of the Luck Lake project.

NRDC-1 TLMP Record of Decision, his actions do not cure TLMP's deficiencies in the categories discussed below. Thus the Luck Lake project cannot safely rely on TLMP.

II. Luck Lake's high grading would violate NFMA.

Due to logging patterns on the Tongass, scarce "high volume" old growth stands have become an endangered part of Southeast Alaska's environment. A state wildlife biologist calculates, based on Forest Service data, that prior to 1978, 70% of all acres logged on the Tongass were in the highest remaining volume class (VC) stands, VC 6 or 7, and 95% were rated VC 5 - 7. Kirchhoff, 1989, Table 4 [NRDC TLMP Appeal]. As a result, half of all VC 6 and 7 lands on the Tongass were already converted to second growth by 1980. Id., p. 1. Only 115,000 acres of the highest volume old growth, VC 7, remained. Kirchhoff, 1988a, p. 1 [NRDC TLMP Appeal]. And logging of high volume stands has continues since then.

NRDC-2 The new TLMP does not prevent continued "high-grading" of these high volume class stands, either in their own right or as part of the agency's new, more inclusive "high volume strata" which lumps VC6 and VC7 together with many VC5 stands because of accuracy limitations in the Tongass' GIS data-base.[2] The TLMP Final Environmental Impact Statement (FEIS) asserts, wrongly, that high-grading is "beyond the scope of the Forest Plan." FEIS, p. 3-299. In point of fact, while the disproportionate selection of high volume stands was legislatively prohibited as early as 1990 by the Tongass Timber Reform Act, the case today is much stronger for an outright moratorium on logging these stands, based on their importance and increasing scarcity. Failure to address it in TLMP is indefensible, and, among other things, violates NFMA regulations relating to biodiversity. See 36 C.F.R. § 219.27(g) (prohibiting reductions in diversity of plant and animal communities, except where necessary for multiple-use objectives and only then if accompanied by an analysis justifying the reductions and detailing their consequences). In addition, given scientific concerns stemming from the demonstrated importance of high volume class and strata stands to old growth dependent wildlife species in Southeast Alaska, see, e.g. NRDC TLMP Appeal, TWS TLMP Intervenor comments, FEIS p. 2-31, continued logging in them would violate the agency's obligations with regard to wildlife viability (at least in the absence of an adequate old growth strategy). See 36 C.F.R. § 219.19 & 219.27.

NRDC-3 Luck Lake perpetuates this failing of TLMP. All action alternatives log significant amounts of high volume acreage. Specifically, the logging in all alternatives is more than one-third from high volume units, and three out of five alternatives would log more than half their totals from high volume units. Draft EIS at 2-13.

[2] We use the term "high-grading" to indicate any selection of high volume class or high volume strata stands for logging, not in the narrower sense in which it is sometime used of "disproportionate" selection of high-volume stands.

2

NRDC-2 Discussion of how the Forest Plan Final EIS handled "high-grading" is outside the scope of this project. The 1999 Forest Plan Record of Decision responded to the appeals of the 1997 Forest Plan and found the plan to be compliant with NEPA and NFMA regarding appellants "high-grading" issue (pp. 58 to 63). In addition, the 1999 Record of Decision set aside more than 87 percent of the current productive old growth from timber development. High volume strata stands are included as a portion of that 87 percent.

Concerns and studies regarding the reliability of the volume class information displayed in the 1979 Forest Plan, expressed both within and outside the Forest Service, resulted in the development of alternative methods of assigning site quality to lands supporting old-growth forests. Statistical analysis indicated that three volume strata could be distinguished for available timberlands; this classification system was used in the 1999 modified Forest Plan. The Luck Lake project is consistent with the Forest Plan. The average volume per acre of the action alternatives ranges between 16 MBF per acre and 17 MBF per acre. This falls within the former timber inventory (1979 Forest Plan) volume class 4.

NRDC-3 The Luck Lake Final EIS identifies 3,800 acres of tentatively suitable and available commercial forest land within the Luck Lake Project Area. Of these 3,800 acres, approximately 592 acres (16%) are considered low-volume strata, 1,296 acres (34%) are considered medium-volume strata, and 1,912 acres (50%) are considered high-volume strata. Harvest of high-volume strata comprises between 42 and 63 percent of proposed harvest within the action alternatives. This is comparable with the percentage of high-volume strata remaining within tentatively suitable and available commercial forest land in the Luck Lake Project Area.

NRDC-3

The high-grading problem is even more acute than the DEIS text reveals. According to the unit cards in the Appendix, significant amounts of the highest volume timber stands would be taken. The cards show volume in the old, more detailed volume class system. Substantial amounts of VCs 6 and 7 are removed by the alternatives. Though the DEIS never summarizes this information by volume class, adding up the information in unit card descriptions, 412 acres in the proposed units are in VC 6, and 41 are from VC 7 stands. Id. at Appendix B.

III. The DEIS's treatment of high-grading would violate NEPA.

NRDC-4

The DEIS's failure adequately to discuss the impact of logging on high volume stands will violate the National Environmental Policy Act (NEPA) if not corrected. Despite the fact that the Forest Service possesses information about the volume class of stands to be logged, as reflected in the Luck Lake unit cards, the DEIS nowhere discusses or compares alternatives on the basis of impacts to VCs 6 and 7. Where high volume logging is discussed, impacts to rare VC 6 and 7 stands are masked by reliance on the Forest's new, more inclusive high volume strata category. See, e.g., id. at 2-13.[3] Moreover, analyses of impacts in the "Environment and Effects" chapter, such as the analyses of the impacts on biodiversity and on threatened and endangered species, generally avoids acknowledging the greater importance of higher quality habitat — either the high volume strata or the rarer sub-category of VCs 6 and 7 — than productive old growth in general.[4] Further compounding its faulty effects analysis, the DEIS nowhere discusses or compares the high cumulative loss of high volume stands (VC 6 or 7, or the broader high strata category) on all lands in and near the Project Area, including non-federal holdings.

IV. Luck Lake's "near clear-cutting" fails to protect the environment.

NRDC-5

We object to the substantial amount of clear-cutting that the Luck Lake alternatives would implement. The project area and its fish and wildlife resources would be harmed by further clear-cutting. Moreover, the DEIS gives a faulty picture of the impacts of proposed logging methods by employing euphemisms for what, in effect, is clear-cutting.

NRDC-4

[3] Without detailed information about data sources and methods, it would be impossible to vouch for the site-specific accuracy of volume projections made using the old volume classes 4-7. However, biologically rich VC 6 and 7 stands did not cease to exist, or to stop being an important and increasingly scarce resource demanding special consideration, simply because the Tongass' established technique for identifying them from its forestwide database proved inaccurate. They could have and should have been field identified and protected. The unit cards' use of volume class suggests that more accurate site-specific data were gathered one way or another. Therefore, there is no reason for the DEIS to ignore these high volume classes in the analysis of alternatives, and deprive the responsible officials, the public, and other agencies of the information needed to evaluate the project's environmental impacts and make a reasoned decision.

[4] The different volume strata are discussed only in the summary and comparison of alternatives; volume strata are completely ignored in the discussion section on silviculture and timber management. DEIS at 3-30 to 3-45.

3

Response to Natural Resources Defense Council

NRDC-4 The Luck Lake EIS discusses and compares alternatives using the Forest Plan's three volume strata categories. The EIS does acknowledge the importance of high-volume old-growth forests for various resources, particularly wildlife. The unit cards have been updated to show acres of harvest by volume strata. See also response to NRDC-2.

NRDC-5 We clarified the prescriptions on the unit cards for the selected alternative to reflect the most current and accurate terminology. Most prescriptions on unit cards in the Draft EIS explored the feasible treatment options available given the vegetative conditions and terrain, including forms of clearcut with reserves, but not clearcut (traditional clearcutting).

The term "clearcut", as defined by Dictionary of Forestry, allows retaining a number of trees to meet specific management objectives. Traditional clearcutting refers to treatments that retain few to no trees and result in even-aged stand conditions. Most harvest units proposed in the Luck Lake Project prescribe harvest methods that retain a significant number of trees and will result in a two-aged or two-storied stand condition. The term "clearcut with reserves" correctly describes actions that will result in two-aged or two-structured stand conditions and do not have uneven-aged objectives or a regeneration need for retaining shelter or seed trees.

The standards and guidelines for goshawk and American marten low grouping retention trees, providing the retention averages 30% canopy cover for the treatment area (harvest unit) and that 10% existing stand structure is retained between reserve groups.

All prescriptions in the Luck Lake project, subject to the Forest Plan standards and guidelines for goshawk and American marten, will meet or exceed these minimum requirements. This includes prescriptions identifying clearcut with reserves, strip cuts, or patch cuts, which will result in two-aged or two-structured stand conditions.

The desired future condition of a young, mixed species, vigorous stand can sometimes be achieved using selection harvest methods. These methods require multiple entries over the rotation to create three or more age classes of trees, and can be less economic. Selection practices would result in uneven-aged stand conditions, are appropriate in certain southeast Alaskan ecologies, and are feasible under certain conditions. Uneven-aged management is prescribed in the Luck Lake project where appropriate.

NRDC-5

The need to transition away from clear-cutting to ecologically based logging methods is widely acknowledged in the scientific record for TLMP and the associated appeal documents. Though the DEIS text acknowledges in only one place and for one unit that alternatives will utilize "clear-cutting with reserves," see id. at 3-37, the unit card "Silvicultural Input" descriptions make it plain that a form of clear-cutting is widely planned. Many unit cards call for clear-cutting with reserves, strip clear cuts, and patch clear cuts. Id. at Appendix B. Far fewer unit cards recommend individual tree selection or group selection. Id.

The DEIS deceptively states that "no traditional clear-cutting" or that "no clear-cutting" is planned for the project. Id. at 2-5, 3-37. However, clear-cutting with reserves is still clear-cutting on all of the unit area not maintained as reserve. Benefits, if any, from this approach are speculative, particularly as they relate to wildlife habitat. Even if wildlife viability were not implicated, to use these methods at all, the agency would need to describe them candidly and make the appropriate "optimality" finding under NFMA.

V. Alternatives 2, 3, 4, and 6 should be modified or eliminated to avoid logging in VCU 582 and to avoid damaging the Ratz roadless area.

NRDC-6

Some alternatives would schedule logging in VCU 582, an intact, unlogged, and unroaded watershed of greater than 5,000 acres in the project area. Along with high-grading and even-aged management, perpetuating entry into intact, roadless old growth blocks ranks as among TLMP's greatest failings. Any consideration of entering VCU 582 should be dropped from the project.

VI. The proposed relocation of old growth reserves would further undermine TLMP's defective reserve system.

NRDC-7

The DEIS's plan to move old growth reserves to beach areas may result in a net decrease in protected old-growth. The stated reason for moving the reserves is to protect more low-elevation habitat. Id. at 3-13. Table OG-6 suggests added acreage and eliminated acreage roughly even out, although no net calculation is made. Id. However, the map at Figure OG-1 indicates that much of the moved reserves consists of beach fringe lands. Id. at 3-14. These lands would be protected in any event under TLMP standards and guidelines, so the net and hidden effect is apparently a substantial decrease in overall protected acreage. While the protection of low-elevation habitat may be appropriate, it is deceptive and damaging to shift any part of an old growth reserve into an already protected zone.

In addition, the beach fringe portions of the project area appears to be a poorer prospect for long-term habitat quality than others. A potential state road corridor exists along the beach fringe of VCUs 581-83, although no road currently exists. Id. at 1-7. Alternatives 2-5 contain no discussion of how placement of a state road through the reserves would affect the viability of the habitat. Id. at 3-13. Furthermore, the DEIS analysis states the "major beach fringe corridor...in VCU 582, remains intact," and relies

4

Response to Natural Resources Defense Council

NRDC-6 While some commenters, such as NRDC, prefer to stay out of VCU 582 and the Ratz roadless area (#512), others would like to see some of these acres made available for timber harvest. The Forest Plan has designated a majority of VCU 582 as Modified Landscape, and a smaller portion as Old-growth Habitat. The Luck Lake EIS proposed different levels of harvest within this VCU to enable the decision maker to make an informed decision.

NRDC-7 Please see the response to CWP-9. Recommendations for re-delineation of small OGR boundaries were developed through an interagency effort, and concurrence was reached among biologists from USDA Forest Service, USFWS, and ADF&G. Additionally, the construction of the beach road between Ratz Harbor and Coffman Cove is not a "reasonably foreseeable project", and is not considered in this analysis (USFS 1999b, pg 1-9). Additional NEPA analysis will be required for any future proposal, including construction of this road.

NRDC-7 on the corridor as maintaining connectivity. Id. at 3-10. However, as the TLMP record and associated appeal documents reveal, roads are a major source of habitat degradation. If the road is ever built, options will be needed for compensating with habitat reserves elsewhere. Thus an additional reason exists not merely not to move existing reserves into the beach fringe area but to preserve additional habitat in other parts of the project area.

VII. The proposed logging causes fragmentation.

NRDC-8 We are concerned that fragmentation of forest interior habitat receives insufficient consideration in the DEIS. This is a serious problem aggravated by widespread logging in the project area in previous years. The EIS fails to discuss or fully portray the conversion of forest from interior to edge conditions, and fails to state whether the estimates of lost habitat for species known to prefer interior habitats include the loss of habitat when forest is converted from interior to edge, or even if the selective cut units are considered lost habitat.

The following units, if logged, would apparently sever existing wildlife corridors connecting old growth habitat in and around the project area. These units should not be logged, or they should be changed so connectivity will be maintained. We derived our conclusion from the DEIS's maps, but the information was not laid out clearly enough for us to be sure of impacts, let alone for a decisionmaker or member of the public who did not undertake additional analysis to do so.

Units increasing fragmentation (includes units separating old growth that is surrounded by second growth as well as non-commercial lands):

-- units separating larger old growth habitat areas – 425, 412, 434, 440, 417, 447, 449, 423, 402, 405, 406;
-- units separating smaller old growth habitat areas – 410, 414, 422.

Conclusion

Thank you for the opportunity to comment. We would appreciate being notified of all further developments with regard to the Luck Lake project.

Very truly yours,

Nathaniel Lawrence
Senior Attorney

Brian Schmidt
Legal Intern

5

Response to Natural Resources Defense Council

NRDC-8 Calculations of deer habitat capability were made using post-harvest Habitat Suitability Indices for a clear-cut prescription. In essence, those units were considered "lost habitat"; in reality the partial harvest prescription will result in better habitat than if clear-cut. The resultant estimate of deer habitat capability in the project area is a conservative one.

The Forest Service views fragmentation at a larger scale than a project area. Fragmentation from implementation of the Forest Plan has been analyzed. The Forest Plan old-growth conservation strategy has two basic components. The first component is the forest wide reserve network, which fully protects over 70% of the 5,060,000 acres of productive old-growth forest. The second component of this strategy is the management of lands with LUD allocations where commercial timber harvest may occur. Within these areas, components of the old-growth ecosystem are maintained by standards and guidelines designed to protect important areas and provide old-growth forest habitat connectivity. Some of these components include beach fringe and estuary buffers, riparian buffers, areas not available for harvest based on steepness of slopes, high-hazard soils, karst terrain, sensitive travel routes, and timber stands not feasible to harvest (the Forest Plan 1999 ROD, pages 52 to 53). The Luck Lake Project implements this approach and is consistent with the Forest Plan.

Timber harvest is excluded from or avoids important high-value habitat areas such as beach fringe areas (1000-foot beach fringe buffers have been implemented, riparian floodplains, etc. In addition, small OGR boundaries have been modified from the Forest Plan (1997) to improve connectivity across the project area (please see the response to CWP-9).

Luck Doc No 254
File Desig D46

Prince of Wales Conservation League
P.O. Box 1109
Craig, AK 99921

May 2, 1999

Luck Lake EIS
USDA Forest Service
P.O. Box 19001
Thorne Bay, AK 99919

Dear Mr. Kimball:

POWCL welcomes the opportunity to comment on the Luck Lake Draft EIS, and commends the planning team for using alternative methods of timber harvest other than clearcuts, minimizing new road building, and minimizing the visual impacts on those units within the viewshed. This treatment is critical to the Luck Lake Project Area area because it has already been so heavily impacted by previous USFS timber harvest, and presently by University of Alaska harvest and other state land sales. POWCL has concerns about the impacts more timber harvest will have on the heavily impacted Luck Lake drainage, which is critical sockeye, steelhead, coho, and pink salmon habitat. It is also important to other wildlife species such as deer, bear, and marten. Another concern is the cumulative impact many of the units will have on the viewshed of Coffman Cove, Luck Lake and Clarence Strait, in light of the recent and future University of Alaska harvests which ignore visual impacts, combined with old and new USFS cuts. The comments that follow primarily address Alternative 3, the preferred alternative, but also refer to Alternative 2, which focuses on key fish and wildlife habitat. (PWCL-1, PWCL-2)

PWCL-3 Luck Lake is an extremely productive system. Comments from biologists studying the area years ago talk of its decline. A recent emergency closure of Eagle Creek to the taking of steelhead only confirms the need to protect this drainage from any further timber activities that would affect downstream subsistence, sport fish, and commercial fish resources. Units within the Luck Lake drainage, especially those with streams in the unit should not be harvested at all. This includes, but is not limited to, units in VCU 581, namely 420 which drains into Eagle Creek and 423 with 7 class III & IV streams within the unit. This entire system has been hit so hard, that it seems incredible this Draft EIS would include units that go into the few remaining unharvested areas within the drainage.

PWCL-4 POWCL is concerned with the statement in the Draft that previous Luck Lake harvests have "pushed the viewshed to limits of acceptable change". If not harvested properly these units would push the viewshed **beyond** limits of what is acceptable. Every unit in VCU 572 with the exception of 407 is visible from Coffman Cove and/or the Alaska Marine Highway. Recent and possibly future University of Alaska harvests have and will continue to scar the regenerating backdrop to Coffman Cove, a community trying to diversify its economy to include visitor and charter fishing industries influenced by a visually appealing landscape. POWCL is concerned that the efforts to minimize visual impacts will not be given priority, and that these and other units will push the viewshed beyond limits of acceptable change.

PWCL-5 Other units of concern from the standpoint of wildlife habitat include unit 434 and 417 in VCU 581. These units if harvested would break apart a somewhat continuous stretch of wildlife habitat. Both are excluded from Alternative 2 which places more emphasis on key wildlife and fish habitat. They should be pulled out of Alternative 3 as well. More high

Response to Prince of Wales Conservation League

PWCL-1 Refer to response DGC-10.

The Luck Lake drainage was designated a development LUD by the Forest Plan. The Forest Plan acknowledges that timber will be harvested in the development LUD's. The desired future condition for the Timber Production LUD, for example, indicates that "an extensive road system provides access for timber management activities" and that "management activities will generally dominate most seen areas" (the Forest Plan, page 3-144). Impacts of timber harvest on wildlife species in development LUD's should be offset by the provisions made by the old-growth strategy in the Forest Plan. The Forest Plan old-growth reserve strategy is intended to provide for biological diversity across the Tongass National Forest. The strategy is designed to reduce fragmentation of old-growth habitat on the Forest, and has been developed through careful analysis and integration of the best scientific information available on the subject.

PWCL-2 Cumulative harvest impacts were evaluated based on a percentage of bare, harvested ground calculated within each viewshed. With the proposed crown retention of 30%, the average forest visitor will notice little visible harvest effects. These effects were considered negligible.

The Alaska Marine Highway viewshed is the least heavily impacted viewshed within the project area and most Luck Lake harvest units are visible to passengers on the ferry. Many impacts are closely grouped within this large viewshed.

Harvest effects on Luck Lake project lands were evaluated based on crown retention of 30% spread evenly throughout the harvest unit. Past experience observed on native corporation lands in Tolstoi Bay demonstrate that areas of selective harvest with crown retention of 30% or greater show little contrast to the surrounding scenery. Helicopter yarding speeds ground cover regeneration, thereby concealing stumps, limbs, and other signs of harvest.

Although the Forest Service has no control over the State of Alaska's harvest of State owned lands, we have a reasonable responsibility to consider the visible impacts generated by harvest on those lands. We based the Luck Lake project analysis on ground conditions prior to June 1998. Due to the lack of available, empirical GIS data on harvest of state lands, estimates on the scenic effects of that harvest were made on a purely subjective, sensory basis. Additional harvest on State lands may push the viewshed beyond the standard set for visible disturbance for Modified Landscape. Presently the visible disturbance on Federal land is 21%. We estimate that State harvest adds another 2-3%. With the viewshed at the limit set for Modified Landscape LUD, silvicultural prescriptions are designed such that crown cover is evenly distributed throughout the sensitive units with no openings larger than 2 acres.

PWCL-3 Avoiding all units within the Luck Lake drainage, especially those with streams, is not realistic. Therefore, standards and guidelines and mitigation measures will be implemented in all units to avoid or minimize any adverse effects to fisheries and water quality.

The Class III stream in unit 581-420 will receive a no cut V-notch (side-slope break) buffer plus a reasonable assurance of windfirmness buffer. The Class IV streams will have at least partial suspension over the streamcourse, with felling and yarding away from the streamcourse where practicable. No yarding up or

PWCL-5 value winter habitat for deer should be considered and left unharvested, as the second growth in the Luck Lake Project Area is extensive. Also subsistence taking of deer is quite high from the Coffman Cove community, adding to the need for more protection of deer habitat.

PWCL-6 Unit 409 in VCU 572 enters the municipal watershead for the community of Coffman Cove. Municipal watersheds should be protected, and timber harvest should be excluded.

Once again POWCL appreciates the opportunity to comment on the Draft EIS, and would gladly work with the agency to answer any questions or elaborate on the concerns mentioned in this letter.

Respectfully,

Cheryl Fecko

Cheryl Fecko
POWCL chairperson

Response to Prince of Wales Conservation League

down the Class IV streamcourse is allowed. Furthermore, this unit will have marten and goshawk standards and guidelines applied with two-aged treatments retaining at least 30% canopy closure. These measures are expected to minimize any adverse effects to fisheries and water quality.

Unit 581-423: Refer to response CWP-47.

PWCL-4 Interdisciplinary review will ensure that the prescriptions and final layout configurations meet the visual quality objectives for these units.

Please refer to the enclosed Coffman Cove City Council Resolution passed supporting the Luck Lake project.

All units, including those visible from Coffman Cove and the Alaska Marine Highway viewsheds, will be laid out to meet the standards identified in the Tongass Land Management Plan.

PWCL-5 Your suggestion regarding modification of Alternative 3 has been noted. Please see the response to NRDC-9 regarding habitat connectivity.

Retention of high value winter habitat was among the justifications for moving the small OGR boundaries in VCU's 581, 582, and 583. Because the Luck Lake Project Area includes development LUD's, deer winter habitat may be reduced, however, the Forest Plan (1997) old-growth reserve strategy was intended to offset some of the negative impacts of timber harvest to deer.

PWCL-6 Refer to response DGC-8.

Portions of several harvest units lie in the watershed that the City of Coffman Cove uses as a public water source. The Forest Plan and State Law requires that the Forest Service, as landowners, notify the water users of proposed activities in the watershed that could affect water quality. Through project scoping, we notified residents of Coffman Cove of the proposed project. As requested in Draft EIS comments, we have moved the 3030429 road to avoid the crossing on Chum Creek. The new road, number 3030351, accesses units 572-409 and 572-410 from the east.

The Selected Alternative includes only one unit that falls within the Chum Creek watershed: 572-405. Within 572-405, only the western portion (approximately 20 acres) is within the watershed. The slopes in this portion of the unit are less than 50 percent. No streams are located within the unit and one Class IV stream, which drains into Chum Creek, is located approximately 300 feet west of the unit boundary.

Response to Southeast Alaska Conservation Council

SEACC-1 We have noted your comments and recommendations.

SEACC-2 While it is often desirable to create as many small sales as possible, it is often not practicable to do so. Timber sale economics are often a deciding factor in sale configurations. Timber sale stumpage receipts must offset logging costs, including road building, or non-selling deficit sales occur. More economical units (often adjacent to existing roads) are often combined with less economical units (often requiring road building or helicopter yarding) to make economically feasible sales. Many smaller, product specific sales are now being produced by the District's Small Sale Program that provides the smaller, "micro" sales you refer to.

Southeast Alaska Conservation Council

SEACC 419 Sixth Street, Suite 328, Juneau, AK 99801
(907) 586-6942 phone (907) 463-3312 fax
info@seacc.org

May 3, 1999

Sent via Fax

LuckDoc No 246
File Desig D4b

Steve Kimball
Thorne Bay District Ranger
P.O. Box 19001
Thorne Bay, AK
99919

Dear Steve:

Please accept SEACC's comments on the Luck Lake Timber Sales Draft Environmental Impact Statement. SEACC is a coalition of 17 volunteer conservation organizations based in 13 communities throughout Southeast Alaska. Our diverse membership includes conservationists from the Prince of Wales Conservation League, Alaska Society of American Forest Dwellers, and SEACC At-Large Board Member Sylvia Geraghty, all of whom live, work, and play in the Thorne Bay Ranger District.

It's encouraging to see that the Thorne Bay Ranger District is slowly moving in the direction of a timber sale program that takes care of smaller scale, island based timber operators. If timber is going to be an important component of the Prince of Wales Island economy well into the future, the Forest Service must help to grow local business by offering small sales from the existing road system. The preferred alternative, while not perfect, is a step in the right direction and does a better job of the providing economical offerings.

SEACC-1 In the preferred alternative, about The 9.3 million board feet of timber would be removed from the woods through the use of a running skyline and other cable yarding systems. These units, which rely on minimal road building and more traditional, relatively inexpensive transport techniques, would have the best chance of selling at this time of depressed timber markets. The Forest Service may consider deleting or postponing sales which require helicopter logging until markets improve.

SEACC-2 Moreover, the Forest Service should try to make this 9.3 million board feet last as long as possible by striving to create as many sales as possible, ranging is size from 40mbf to 500mbf. There is clearly a need and a demand for sales of this size range on Prince of Wales Island. The Thorne Bay Ranger District has done a good job of soliciting input from the public. Luck Lake provides an excellent opportunity to provide the small sales the public wants. The 15 sales offered in the preferred alternative are a good start, but the

ALASKA SOCIETY OF AMERICAN FOREST DWELLERS, Point Baker • ALASKANS FOR JUNEAU • CHICHAGOF CONSERVATION COUNCIL, Tenakee • CUSTOMARY & TRADITIONAL GATHERING COUNCIL OF KAKE • FRIENDS OF BERNERS BAY, Juneau • FRIENDS OF GLACIER BAY, Gustavus • JUNEAU AUDUBON SOCIETY • LYNN CANAL CONSERVATION, Haines • LISIANSKI INLET RESOURCE COUNCIL, Pelican • NARROWS CONSERVATION COALITION, Petersburg • PRINCE OF WALES CONSERVATION LEAGUE, Craig • SIERRA CLUB, JUNEAU GROUP • SITKA CONSERVATION SOCIETY • TAKU CONSERVATION SOCIETY, Juneau • TONGASS CONSERVATION SOCIETY, Ketchikan • WRANGELL RESOURCE COUNCIL • YAKUTAT RESOURCE CONSERVATION COUNCIL

SEACC-2 Forest Service can do better. Larger operators have ample opportunity to purchase larger timber offerings from the Control Lake and Lab Bay project areas. Luck Lake could serve as a source of green timber for small operators for years to come.

Issues:

SEACC-3 **Access Management**. Protection of fish and wildlife habitat in the heavily impacted Luck Lake project area is of great importance and access management is clearly an important management tool. However, road closures are not a panacea. SEACC is aware of the intense public opposition to many of the proposed road closures in the Luck Lake Project area. We hope the Forest Service will use more flexibility in its access management plan for the Luck Lake Project Area. Increased citizen involvement through collaborative stewardship is strongly encouraged. Perhaps citizen involvement in the road maintenance monitoring process, as has been suggested by Citizens Against Road Closures at recent North Prince of Wales Collaborative Stewardship meetings, could work for the Luck Lake Project Area as well.

SEACC-4 Clearly some roads, in some places, should be closed. In some cases, roads that never should have been built should be put to bed. But the road closure list needs to be prioritized and local communities should be given the opportunity to "ground truth" that list. The lack of variance in the proposed access management plan from alternative to alternative indicates formulation of the plan was not a collaborative effort. More work with the public, funneled through the ongoing collaborative stewardship program, needs to occur before the issuance of the FEIS and ROD.

SEACC-5 There is also a crying need for better law enforcement on the Thorne Bay Ranger District. Both the State of Alaska and the Forest Service need to provide more money for enforcement. It's also essential that the land managers and the law enforcers improve their level of cooperation and coordination. Poaching and/or illegal hunting is a serious problem on the Thorne Bay Ranger District water bars will not solve this problem. Better, more aggressive enforcement of existing laws and regulations is the best chance for success.

Fisheries and Associated Water Resources:

SEACC-6 An important recommendation from the 1995 Anadromous Fish Habitat Assessment (AFHA) was that the Forest Service should undertake cumulative watershed effects analysis before project planning. Although the Forest Service has attempted to implement a Watershed Analysis for the Luck Lake Project, the analysis is incomplete and must be enhanced.

The Luck Lake watershed analysis failed to adequately account for the impacts of past present, and future logging on streamflow. In discussing watershed disturbance, a recent draft handbook for conducting watershed analysis explains that "removing timber can result in elevated peak flows, depressed low flows, increase groundwater tables, and hydrologic effects." USDA, Alaska Region *Watershed Analysis Handbook* at 25.

2

Response to Southeast Alaska Conservation Council

SEACC-3 We have noted your comments and recommendations.

SEACC-4 Refer to response DGC-5.

SEACC-5 We have noted your comments and recommendations, however law enforcement issues are outside the scope of this project.

SEACC-6 See response to Myren-3. We agree that analysis of existing Staney Creek flow data is appropriate for improving the science of streamflow in response to timber harvest. However, flow data is not necessary for a reasoned decision on the Luck Lake project because the Lake provides a refugium for fish and spawning habitat during the period of low flow. The lack of fish kills in the watershed suggests that streamflow is not a factor limiting fish production in the Luck Lake Watershed.

In addition, timing of precommercial thinning and projected commercial thinning will serve to lessen the effects of vigorous young second-growth on evapotranspiration and streamflow levels.

This analysis is important due to the high value wild sockeye and steelhead sport fishery that exists in the Luck Creek and Luck Lake.

SEACC-6

Decreased low flows result from higher evapotransporation rates caused by the conversion of old-growth stands to fast growing second growth . Such effects are only visible after second-growth is well established. It does not appear the Forest Service has fully evaluated the effects of clearcutting on streamflow. Approximately 9,900 acres of the project have been clearcut since 1955, and prior to 1990, some fish bearing streams were logged to their banks. Analysis of the cumulative impacts of this activity on streamflows should occur now. The Forest Service could gather this information by comparing findings to the data supplied by the US Geological Survey on nearby watersheds. The USGS collected enough raw flow information from nearby Staney Creek to evaluate the long-term effects of clearcutting on fish and watershed resources.

Karst:

SEACC-7

The Forest Service must guarantee logging in the Luck Lake project area does not negatively impact karst resources. With 63 percent of the project area's karst already impacted by logging, (DEIS 3-82,83) it's imperative the remaining high vulnerability karst are off-limits to logging and road building and are removed from the timber base. The Karst section fails to provide adequate information to the public regarding the quality and extent of the Karst analysis. 40 C.F.R. 15001 (b) NEPA requires that information contained in Environmental Impact Statements be of "high quality."

While SEACC is aware that well trained karst experts are stationed at the Thorne Bay District, we are unable to determine from the information contained in the Luck Lake DEIS if these experts actually completed the field work in the Luck Lake Project area. Inadequate karst analysis and field inventory associated with the Heceta Island Hemlock Sawfly Sale has led to the deep level of skepticism regarding the quality and thoroughness of Forest Service efforts to identify karst . Please include better documentation of the steps taken to identify karst and mitigate negative impacts to karst.

Units of Concern/Interest:

Local Prince of Wales Island residents raised the following concerns about the units listed below.

SEACC-8 581-423 Concerns about cumulative negative impacts on visual quality as well as further negative impacts to the heavily logged Luck Lake watershed.

SEACC-9 581-449 Concerns about cumulative negative impacts on visual quality and further impacts to heavily logged Luck Lake watershed

3

Response to Southeast Alaska Conservation Council

SEACC-7 The Final EIS has been updated to document the level of karst resource inventory within the Project Area. As a result of public comment, karst management specialists revisited the proposed harvest units of concern during the summer of 1999 and applied additional, needed mitigation, making adjustments to harvest unit boundaries and access road alignments and confirming the presence or lack of karst resources.

SEACC-8 Refer to responses PWCL-1 and PWCL-2. Only 3.5 acres of this unit is visible from the viewpoint at Luck Lake Picnic Area.

SEACC-9 This unit is not visible from the viewpoint at Luck Lake Picnic Area.

SEACC-10 572-405 Concerns about economics, the unit card indicates the entire unit is comprised of volume class four timber. Concerns about negative visual quality impacts since this unit may be visible to boats and ships on Clarence Strait.

SEACC-11 572-406 Please work to minimize negative visual quality impacts. This may be a good timber sale for local small operators. Please attempt to find similar sized opportunities for small operators.

SEACC-12 572-407 This appears to be a good offering for small operators. It's small size and minimal road construction requirements are a welcome change to multi-million board foot offerings requiring many miles of road building.

SEACC-13 572-408 This appears to be a good opportunity for small timber operators due to its size and proximity to existing roads. Why was this unit dropped from the preferred alternative?

Thank you for the opportunity to comment.

Respectfully,

Tim Bristol/SEACC

4

Response to Southeast Alaska Conservation Council

SEACC-10 Refer to responses PWCL-1 and PWCL-2.

SEACC-11 Refer to response PWCL-1.

SEACC-12 We have noted your comment and recommendation. Unit 572-407 is included in the Selected Alternative.

SEACC-13 We have noted your comment and recommendation. We did not include unit 572-408 in Alternative 3 because we were attempting to minimize the amount of new road construction. Approximately 1/3-mile of new road construction would be required just to access this 8-acre unit.

To:
Date: April 17, 1999

Assistant Forest Supervisor, Carol J. Jorgensen
District Ranger, Steve Kimball
Team Leader, Tom Ford

Thank you for this opportunity to respond to the Luck Lake Timber Sale Draft EIS.

I have been a resident of Alaska for 17 years, the last 13 being here in Coffman Cove. I am currently a member of the Coffman Cove City Council. I attended the Forest Service's Collaborative Stewardship Symposium in KTN where I was chosen to be a convening member to help establish the rules and guidelines for the Thornebay Collaborative Stewardship Project. I am now a participant in the ongoing Thornebay Collaborative Stewardship Project.

Hull-1

I support the F.S. Preferred Alternative No. 3. I would have chosen No.4 or No. 6 for there additional volumes, but because of current market conditions chose 3 for it's economics.

Reasons I recommend Alternative Three:

1. It maximizes the contribution to the timber products industry.
2. Provides the most economical timber sales.
3. Provides a diversity of opportunities for recourse uses that contribute to the local and regional economies of Southeast Alaska.
4. Has sufficient volume to offer more and smaller sales as to meet the needs of different types and sizes of purchasers.
5. Coffman Cove residents as well at Thornebay residents are currently 60 to 90% KPC dependent. Both communities are actively pursuing all avenues of economic diversification so as to become economically independent. This may very well be the last season of KPC jobs for the local residents. I cant stress enough the importance of local timber related jobs to these residents to aid in the transition period. The last couple years KPC has been forced to cut back on the over time. The employees have only been working five days a week eight hours a day compared to the traditional six days a week ten hours a day. Coffman Cove only received four checks in the amount of $78,000.00 each from Senator Steven's Economic Disaster Aid Money. Thornebay didn't fare much better. It's very difficult to help your community diversify on such a limited budget.

Hull-2

Access Management Plan:
You state when fully implemented 43.2 miles of forest system roads will remain open to public uses. Although I have no means to accurately measure these from your maps, I only come up with roughly 30 to 35 miles remaining open.

Hull-3

I feel your access management plan closes so many of our roads that it destroys our ability to sustain the quality of life we currently choose to live and enjoy.

Hull-4

You state part of your access management strategy is to address and reduce, through road closures, some of the currently existing effects on wildlife. I have a problem with this policy given the fact that every other year or so the Department of Fish and Game holds a two week doe season in our area over the objections from local residents as well as Resolutions from the Coffman Cove City Council against it.

I sat through the Public Hearing on Subsistence Luck Lake EIS held here in Coffman Cove on April 12. There was a good turnout from the community to give verbal testimony. I took notes from peoples testimony. Without fail everyone of the testimonies for one reason or another were against so many roads being closed. I also heard testimony as to wildlife on the increase not decrease. I've attended meetings here in the past where local opinion was in favor of less bag limits over road closures.

I appreciate your time and consideration as to my comments.

Sincerely,
Ron W Hull

Response to Ron Hull

Hull-1 We have noted your comments and recommendations supporting Alternative 3. The Selected Alternative is a modified version of Alternative 3. Please refer to the Luck Lake Record of Decision for more information.

Hull-2 We queried the Forest Service GIS database to determine the miles of forest system road that will remain open to public uses after the Luck Lake project is implemented. The numbers displayed in the Final EIS reflect changes made in the updated access management plan.

Hull-3 We have noted your comments and recommendations. Refer to DGC-5. Since your comment, we have met with you and residents of Coffman Cove many times regarding access management. These meetings, we hope, have changed the plan to one more mutually acceptable.

Hull-4 We have noted your concerns with using road closures to mitigate effects on wildlife. Refer to response DGC-5.

Please return this form to:

Thorne Bay Ranger District
Attn: Luck Lake IDT
P.O. Box 19001
Thorne Bay, AK 99919

Questions? or
Need additional information?
Call Tom Ford, Team Leader, at:
(907) 828-3210 or 828-3304

Comment Deadline: May 3, 1999

LUCK LAKE DRAFT EIS
Comments

NAME: Mark Minnillo
ADDRESS: PO Box 19241
Thorne Bay AK 99919
PHONE: 828-3453
DATE: 4/14/99

COMMENTS:

Minnillo-1
After discussion, the Alternatives w/ FS personnel, I would have to say that my preferred Alternative would be #5. This Alt. minimizes road building, leaves Old Growth corridors and Keeps harvest out of the Luck Creek drainage. The only direct fisheries impacts seem to be unit 423 which drains into Luck Lake. Should not be a problem due to filtering effect of the Lake. Most units are fairly easily accessable.

Minnillo-2
The Net Value of Alt. 5 is considerably lower than Alt. 2? I don't follow this. Alt. 5 is not the most economical but I feel Alt. 5 is very environmentally sound.

Minnillo-3
I disagree with any road closures!

Luck Doc No 233
File Desig D46

Response to Mark Minnillo

Minnillo-1 We have noted your comments and recommendations identifying Alternative 5 as your preferred alternative.

Minnillo-2 Several factors influence the value of the stumpage that we sell from National Forest Lands. Logging and road building costs are subtracted from the value of standing timber to arrive at a round log price per hundred cubic feet (CCF). The difference between Alternative 2 and Alternative 5 is that Alternative 5 has one additional mile of new road construction, and .9 miles of additional road reconstruction. These additional costs are subtracted from the standing timber value to arrive at an $11 difference between the two alternatives.

Minnillo-3 We have noted that you disagree with any road closures. Refer to response DGC-5.

Luck Doc No 241
File Desig D4b

Steve Kimball
District Ranger
Thorne Bay Ranger District
Tongass National Forest
P.O. Box 19001
Thorne Bay, AK 99919

Dear Mr. Kimball:

For with is my response to the Luck Lake DEIS, with one attachment. The Kirchhoff and Thomson paper will follow by mail.

Sincerely,

Richard T. Myren
3320 Fritz Cove Road
Juneau, AK 99801
May 3, 1999

May 04 99 12:28a Richard T. Myren 907-789-9165 p.1

Luck Doc No 241
File Desig D4b

Comments on the draft Luck Lake EIS

Watershed disturbances on one of the prime fish producing watersheds in southeast Alaska due to logging have occurred (pages 12 and 13 *Watershed Analysis for the Luck Lake Project Area* March 1998). Now more is proposed.

Myren-1

A general comment of WALP (p. 7) of logging away from a stream for Coffman Creek will protect the stream from damage in terms of water volumes is incorrect. After the short term increase in flows occur the long term flows decreases in flows begin. When that water volume goes up into the atmosphere due to evapotranspiration it does not flow down the creek. The same can said for Chum Creek (p.10), and Luke Creek (p.12) and flows will be reduced.

I hope others will evaluate the Risk Analysis methods. It is clear this method was chosen to justify logging upon steeper slopes rather than a wholesome effort to protect the fishery resources. Had the latter been the objective methods like the risk analysis would be extended to each small unit with in the watershed that was to be logged and the effects upon fish habitat, not just sediment be addressed. One of these effects is the long term streamflow reduction effect due to increased forest evapotranspiration.

Myren-2

Absent from my response to this DEIS is a cumulative effects analysis of baseflow comparable to the arguments presented in my Indian River DEIS response (including the three attachments) which presented an analysis of effects of second growth vegetation on baseflows. I am not going to repeat that analysis here in this response The continue reliance of examples of sediment risk analysis SRA addressing all cumulative effects analysis in the Luck Lake Timber Sales draft EIS again demonstrates the poverty of Forest Service ecological thought and possible violations of legal statutes requiring substantive cumulative effects analysis The continue lugging in this once fabulous fish producing stream and lake system is very distrubing. To believe that SRA addresses all the dangers of logging to fish habitat seems both foolish, and illegal. The procedures in the cook book SRA should be applied to each piece of logging area as it affects the water balance of the drainage system from that logged unit in terms of reductions in amount of habitat available to fish during long term periods of flow reductions of the second growth forest replacing the previous Old Growth forest within in logged unit This method would sum the reduced water supplies due to increases in evapotranspiration of second growth forest compared to Old Growth forest. The effects upon water supply on amount of habitat can be estimated and projected over the life time of the second growth until a new cutting. The same procedure can be followed for the extensive previous cutting to estimate the total effect.

A further confirmation of short and long term effects of logging and disturbance regime on forest resources.

I had the pleasure of attending Matt Kirchhoff's presentation last month at the Audubon Society meeting and listening to the accomplishments in his work, *Effects of Selective Logging on Deer Habitat in Southeast Alaska: a Retrospective Study.* Suddenly I was aware that here is what Bormann and Likens[1] had reported years ago, but here expressed through the retrospective analysis using tree growth and cutting cycles which was

1

Response to Richard Myren

Myren-1 No modifications to the Forest Plan Riparian Standard and Guidelines have been proposed for the Luck Lake Project Area. These Standards and Guidelines were developed through a collaborative effort involving lead watershed and fisheries scientists from Federal (management and research) and State (ADF&G, ADEC) agencies. They are the measures established to avoid any additional impacts to aquatic resources from management activities and can only be modified through an approved, site-specific watershed analysis. Although the Forest Plan did not require the Forest Service to conduct a watershed analysis for this project, we chose to anyway, as it provided valuable context for the planning process.

Myren-2 The sediment risk index (SRI) is not intended to address watershed water balance issues. Rather, the SRI summarizes the existing condition in each watershed. A quantitative method to establish thresholds for cumulative effects has not yet been developed for watersheds of the Tongass National Forest. An accurate analysis of cumulative effects requires long-term knowledge of interactive, landscape processes that are rarely available at the project scale. Without a literature-based method for describing the natural range of hydrologic and geomorphic variability in the Luck Lake Project Area, the Tongass Land Management Plan provides specific guidance.

In the Luck Lake planning process, relative watershed rankings were assigned based on the proposed management activities. The rankings accounted for existing resource conditions and uses, and included scores from models developed to establish sensitivities to and potential risks from the proposed activities (soils, riparian areas, streams, aquatic resources). The rankings do not represent thresholds, but are used to evaluate the range of watershed conditions and identify specific areas of concern

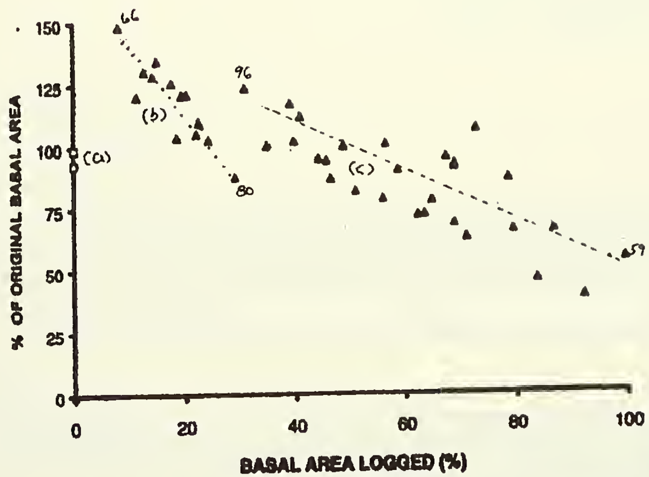


Figure 1 Proportion of original basal area regained as a function of logging intensity (triangles) and no cutting (squares) (From Kirchhoff and Thomson, 1998, table 1. Numbers on triangles are tree ages(yrs.) of selected samples.). Periods for water volumes classification (from Myren, attachment): (a) baseline or pristine watersheds (small squares on left axis) , (b) .... after logging discharges and period of increased water yield during and immediately following logging, (c)--------- period of reduced water yield following vegetative regrowth. Lines fitted by eye.

not available to them. The hydrological cycle (resources) fits in just as it did in Bormann and Likens. I have taken the liberty of removing the regression line of Kirchhoff and Thomson's figure 6 and replacing it with two eye fitted lines. I invented a nomenclature for a legal definition of "Various Levels of Water Volumes" which identifies three forms of water volumes of streamflows: (a) from Old-growth forests, (b) from early succession and Aggradation phase of succession, and (c) from second growth forests and the long term Period of Reduced Water Yield, clearly recognizing that it is not just water but also the combined resource which includes nutrients and light. A need for clarification had been promoted by the NFMA regulations at 36 CFR 219.23(c),

> . . . Forest planning shall provide for . . estimation of the probable occurrence of various levels of water volumes, including extreme events which would have a major impact on the planning area."

which indicated a clearer meaning of the process had to be provided for forest planning. The basis of the definitions come from the literature which I defined as (a), (b) and (c) as given on the Attachment #1 for the definitions of "water-volumes" and the Forest Service response to the Appeal.[2]

The availability of forest resources (A) for growth is inversely related to the percent basal area logged. Employing the water volume classification as a surrogate for resources available for growth, i.e., light, nutrients, and water, it can be seen in figure I the uptake of "new resources" A is highest with smallest basal area logged for (b) water volumes and decreases more rapidly compared to (c) water volumes due to rapid revegetation as early successional species disappear and revegetation is reestablished by slower growth conifers. Availability of resources is apparently zero, or A = 0 at the water volume level (a) for Old Growth stage (two boxes on vertical axis), A > 0 to approximately 40% of the basal area logged, and A < 0 thereafter until the Old Growth steady-state returns. Because the ages of the three highest basal areas logged in figure 1 are 59, 85 and 94 years of age (see Table 1 of KT) are about 35 to 55% of the original basal area (y-axis) many centuries would appear necessary the forest will return to the Old Growth steady-state with A returning to zero..

The important contribution of the relation of figure 1 is that competition among competing members for limited resources (A) increases with the more basal area cut. Growth rates are higher for early successional species and the more quickly they exhaust them which results in a steeper slope for (b) than for (c), second growth in which growth rates are slower and more individual members compete, because more was cut of the original basal area compared to (b), and less basal area in percent is added to (c) to the original basal area. When a small amount of basal area is logged a few new trees do not have the competition for resources (A)–light, nutrients, and water, because the unlogged old growth is no longer in competition and the few new trees have a higher share of new resources released among themselves than if a large amount of basal area was cut.

The Kirchhoff and Thomson paper therefore clearly gives observational support of Bormann and Likens's *Pattern and Processes*. Kirchhoff and Thomson have an achievement of no small significance. Considering the long-term period of successional states of the forest these data are of immense importance to such relations of the use of water by second growth in relation to the productivity of the water resources in rearing fish and sustaining aquatic organisms.

Long term effects on forest hydrology from cutting of Old Growth forest.

Myren-3 The evidence of long term of figure 1 disagrees with the Watershed Analysis of Indian River (WAIR, 1996)[3] and the statement made that Myren and Ellis (1973)[4] "speculated" on these long term effects rather than recognizing that our symposium paper was only drawing from the published literature, and in which we went into considerable effort to assure we went no further, nor into the realm of speculation. WAIR also stated that the consideration of long term effects was a" new issue" to the Forest Service. I had disagreed with that in the my response to the draft EIS for Indian River because there is a history going back to my contact with Louis Bartos in 1978. I further pointed it out in my response to the draft EIS for the Indian River sale (for which the Forest Service unfortunately did not respond because the sale was canceled and no final EIS was prepared). The Forest Service history of neglect includes: (1) the Myren and Ellis paper in the 1983 symposium and 14 years ago (Its recent citing in WAIR was unusual, the only time I know of the Forest Service spontaneously cited it.), (2) Hicks *et al.*, 1991 publication 6 years ago, (3) before the *Hicks et al.*, publication 13 years earlier in 1978, I had raised this issue with Forest Service hydrologist Louis Bartos. (Furthermore, Dr. Brendan Hicks told me while a graduate student at Corvallis he had read the Myren and Ellis paper and it had a bearing upon his interest which led to the 1991 publication), (4) Chief Thomas's directive to the Regional Forester following the Central Prince of Wales EIS 1994 Appeal dated February 2, 1994 stated, ". . I direct the . . Region to initiate a monitoring plan to validate the model employed to estimate the cumulative effects of timber harvest on streamflow."[5] (Emphasis added), and 5 years ago, and (5) a former Forest Service hydrologist, Dan Bishop, who went into private practice– is now no longer with us–and left me a copy of his paper on evapotranspiration[6] which I forwarded to Dr. Caplin of the Forest Service sometime in the middle 1990s.

3

Response to Richard Myren

Myren-3 The Indian River Watershed Analysis was conducted on the Chatham Area and did not have any bearing on decisions regarding the Luck Lake Project Area. Refer to response SEACC-6.

I hope that the Kirchhoff and Thomson paper is appreciated because it clearly shows resources, which include water, become limited in the long term period of the second growth forest. Their information should constitute a Forest Service "call to arms" and get them down to work, and start addressing what they should have been doing decades ago.

Active streamside management is challenged by these findings from retrospective analysis of tree growth.

Sedell and Swanson (1984)[7] proposed higher biomass in second growth forests compared to Old Growth forest. The higher biomass was a projection and not an observed increase because the long period of effects of second growth on stream biomass could not be measured. Figure 1 does not support higher availability of resources (A) in second growth forests with c-type water volumes.

The speculative nature of the Myren and Ellis report.

Myren-3

A comment in the now canceled Indian River proposed timber sale in the *Indian River Watershed Analysis* (IRWA) was made that the Myren and Ellis (1984) report was speculative. The previous interpretation of the Kirchhoff and Thomson support without speculation Myren and Ellis and the general view of Bormann and Likens that long term effects of logging reduce baseflows .

As I said at the beginning, if the Forest Service wants to terminate this kind of criticism it should not depend upon labeling the Myren and Ellis paper as "speculative" to do the job (see below) but instead put some teeth in the criticism. All it requires is to determine the difference in the evapotranspiration rates between Old Growth forest and second growth forests of 0.088 area-mm/day between the two regimes is unfounded. I was surprised the IRWA could not cite literature in support of its position on the Myren and Ellis paper. Let it be hoped LLTS final EIS does not make the same mistake.

IRWA on page. 40, 3rd para., 1st sentence stated. "Reduction in ..low flows . . resulting from increased evapotranspiration rates from Old Growth forest to second growth forests is a new issue." (Emphasis here and hereafter added). By labeling this a "new" issue does not shift the responsibility for the failure of recognition. Does the appearance of Myren and Ellis paper in the 1983 symposium and 14 years ago make this a "new issue"? Does the Hicks *et al.*, 1991 publication 6 years ago make it a "new issue"? And before its publication 13 years earlier in 1978 I raised this issue with Forest Service hydrologist Louis Bartos. (Furthermore, Dr. Brendan Hicks told me while a graduate student at Corvallis he had read the Myren and Ellis paper and it had a bearing upon his interest which lead to the 1991 publication. Does former Chief Thomas's directive to the Regional Forester following the Central Prince of Wales EIS 1994 Appeal dated February 2, 1994 which stated, ". . I direct the . . Region initiate a monitoring plan to validate the model employed to estimate the cumulative effects of timber harvest on streamflow."[8]Emphasis added) and 3 years ago make it a new issue? No, it does not. Is labeling it a "new issue" because of the Forest Service failure to take timely action? That is the new issue.

IRWA on. 40, 3rd para., 3rd sentence cites Hicks *et al.*, to support a Forest Service policy that low flows will be less likely to occur if the riparian zone is unlogged, "Low flow changes are most likely to occur where a significant portion of the stream riparian area has been harvested (Hicks *et al.*, 1991)." is not entirely what Hicks said and implied. They had qualified their statement which the Forest Service interprets as the basis of its management directive, "If the establishment of hardwoods in the riparian zone following clearcut logging has cause water yields of WS1 to drop below predicted yields, as we suggest, then future forest harvest practices should protect conifers in the riparian zone during logging to suppress hardwood growth and thereby maintain

4

summertime water yields." (Emphasis added.) with qualifiers such as "if. . .has caused . .", "may have been responsible", "were thought", "not entirely understood", "are likely", and "possibly". They endorsed keeping Old Growth forest not second growth forest in the riparian zone. They end with, "In view of the importance of the existing hydrologic records from WS 1, 2, and 3 in the H. J. Andrews Experimental Forest, continued collection of hydrologic data from these watersheds is imperative." The work that made Hickes et al., possible is still a work in progress and is in no means completed with a second growth period less than two decades being compared to an Old Growth forest which involved centuries to develop.

The Hicks *et al.*, publication six years ago stated that the continued collection of hydrological data from H.J. Andrews Experimental Forest was "imperative". Some of the reasons why it was imperative are the unanswered questions which Hicks *et al.*, posed. They include: (1) Note that the conifers to be protected are Old Growth conifers not second growth conifers. Why? (2) Note that base flows did decrease in second growth, which in part validates Myren and Ellis though it was tentatively assumed to be due to hardwoods. Can it be assumed that evapotranspiration rates in Old Growth forest and second growth forests are the same? (3) If total water loss through evapotranspiration is a function of leaf area then is not leaf area increasing as increased shading of the conifers over top the hardwoods and total evapotranspiration will be as great as the hardwoods if not greater? And this is a "new issue" now! The only reason it is attracting attention now, in my opinion, is because I had reported often its absence in Forest Service EIS documents.

These statements may exhaust what Hicks *et al.*, said and did not say about the subject. A critical review of the Myren and Ellis paper will show it is no more speculative than the speculation which Indian River Watershed Analysis IRWA (p. 40) presents in its attack on our paper with its misrepresentation of substance of what Hicks *et al.*, reported.

Myren-3

What is important about the Myren and Ellis paper is we proposed that the Forest Service look at this problem of second growth forests increased evapotranspiration. We reported evidence for the phenomenon which was not available from field observations at the time in the United States but theory and plant physiology suggested supporting evidence. We cited supporting evidence from Russian literature. Our paper was a cautious and deep exploration of the existing literature at the time on the subject. We clearly stated,

> . . . Extrapolating from the literature leads to the conclusion that converting significant portions of old-growth watershed to rapidly growing second-growth risks permanently reducing summer low flows of the streams, and, thus their ability to produce salmon. It is recommended that this risk be considered in managing the forest and that effects on streamflow of converting old-growth forest to second-growth forest be included in studies of logging in southeast Alaska." (From the ABSTRACT).

We also say in the INTRODUCTION,

> . . . In the short term, cutting the trees reduces evapotranspiration and increases summer base flows of streams. In the long term, however, forest succession after cutting results in increased transpiration and probably reduced streamflows. Although the short-term increases in streamflows following cutting are well-known, the long-term changes in minimum streamflow and the possible effects on fishes during forest succession are not."

In the SUMMARY AND CONCLUSIONS we say,

> . . . The circumstantial evidence summarized here indicates that . . . we may be permanently impairing the ability of many of our streams to produce salmon. The first steps in defining the

problem will be to determine what changes in evapotranspiration and minimum streamflows occur as a result of various logging practices for each of the soil-watershed types in southeast Alaska . . . . At the present rate of cutting our old-growth forests, especially those highly productive forests on our most productive streams, most of the damage would be done before we have positive proof that it is occurring.

We recommend that the potential for significant reductions in low-flow conditions resulted from conversion of old-growth forests be considered in evaluating potential logging plans. This consideration must be extend to the smaller watersheds and tributaries which produce most of the coho salmon and trout in Alaska and would be most vulnerable. The risks to fisheries resources are high in many streams, and the effects would be essentially irrevocable."

Myren-3

This is not "speculation". What Forest Service interpreted as our speculation was simply our request for the facts when evapotranspiration is likely to occur at different rates during forest succession. And it certainly is not a "**new issue**". How much longer will Forest Service hydrologists sit on their hands. But this is the old story of Forest Service resistance and delay. Did the reduction in low flows resulting from increased evapotranspiration become labeled as a "new issue" originate from the field offices or higher? I hope the Forest Service will not cite studies instituted recently by the Forest Sciences Laboratory as why the Region has a change of heart, if it has. A significant part of it has already been done without taxpayer's expense in the enclosures and these comments, in my opinion. I wonder how diligently the Forest Service has maintained the measurements on the H. J. Andrews Experimental Forest as recommended by Hicks *et al.*.

Closing comments.

It is noted in the Indian River Watershed Analysis, p. 40, 2nd paragraph that increases in streamflow begin when summer low flow volumes after 35% of the forest is cut. This is of course incorrect because they increase after the first tree was cut. The relatively crude methods of observations of increases in stream flow detect the increased flow only after 35 % cut. But TLMP later recognized that increases were evident and observable upon reaching 20 % cut.

Myren-4

It is therefore now interesting to note how the Forest Service made the decision in the revised TLMP process to put down the one of the few, solid and major concepts won in Alaska by an Alaskan hydrologist, Louis Bartos, for Alaskan streams over the past several decades since the inception of large scale logging , the percent and duration of the "cut-rule" based on the solid evidence of the effect of a 20% to 35% amount of cutting on streamflow. It should have been a proud moment, and a refreshing change and conceptual basis of Forest Service policies and cutting decisions. But Louis Bartos findings were replaced with bureaucratization of the language by dismissing it as a standard and placing it on a slippery slope of non-quantitative qualitative gobbledegook (ROD May 1997 TLMPR, p. 18),

.. The standards and guidelines and other direction of the Forest Plan I am approving today meet or exceed all of those recommendations by AFHA, and include some of the features of option 1. These standards are guidelines will be applied in all watersheds on the Forest, and are sufficient to protect fish habitat and provide for sport and commercial fisheries and subsistence."

I cited the Indian River watershed analysis because it seems to be the last visible evidence that the 20% to 35% rules slip beneath the Forest Service seas of obfuscation. Now where over the visible horizons of the Forest Service does this problem continue to rear its dirty head and ever more so with the disclosures and interpretation of the data of the retrospective analysis of tree growth and distrubance of Kirchoff and Thomson.

6

Response to Richard Myren

Myren-4 The following write-up by Bruce Sims, Tongass National Forest Hydrologist located in Petersburg, does a good job of summarizing our current state of knowledge on the low flow issue for Southeast Alaska:

> *Studies in western Oregon have indicated that past logging has decreased the amount of precipitation intercepted by the forest canopy and evaporated back to the atmosphere without touching the ground. This resulted in increased annual water yield (Harr, 1989). Larger increases generally occur in watersheds with the most extensive harvest (Harr et. al., 1975). When 35 percent of a watershed was harvested on Prince of Wales Island, low flows were significantly increased (Bartos, 1989). One study conducted in western Oregon indicated that, over the long term, summer low flows decrease below pre-harvest levels as vigorous riparian-area regrowth occurs (Hicks, Beschta, and Harr, 1991). Another study in western Washington found that stream-water temperature was statistically correlated to soil temperature of the surrounding area. The relationship following harvest appeared to weaken, possibly because of increased diurnal variation in soil temperature (Brosofske, et. al., 1997). No long-term peer reviewed studies have been conducted in Southeast Alaska regarding the effects of timber harvest on water yield during low flow periods. However, cooler temperatures and greater summer precipitation may decrease any long-term reductions in low flow when compared to Oregon and Washington.*
>
> *Stream-buffer requirements now used on the Tongass National Forest, will eliminate stream-bank harvest on Class I, II and III streams. Only the smallest streams (generally less than 5-foot active channel width) will not have streamside trees retained (the Forest Plan, 1997, pages 4-53 to 4-71). Since there will not be riparian-area harvest and subsequent regrowth of riparian-associated species with high transpiration rates, and soils will generally be covered by an organic mat, it seems unlikely that stream temperature will increase or summer flows will be reduced.*
>
> *Logging in Southeast Alaska may have less effect on runoff than in other forested regions because of the typical long duration storms, which often persist well beyond the point where the canopy is saturated. Once saturated, it is likely precipitation that falls on the canopy drips to the forest floor at near the same rate as it would in a clearcut. Harvest prescriptions such as group selection and single-tree selection, which will cut from 10 to 60 percent of the timber volume, have been prescribed in several recent timber-harvest EIS's. These prescriptions could create less change in water yield than conventional clearcut.*

The Forest annually collects runoff data from paired sub-basins of the Staney Creek watershed, through an agreement with the U.S. Geological Survey (USGS). The purpose of this stream-flow monitoring project is to collect definitive information on hydrologic characteristics of a relatively undisturbed sub-basin, compared to the hydrology of other portions of the watershed with a high percentage of old-growth harvest. This comparison will provide better quantitative assessment of the relative effects of high-intensity management (characterized by extensive clearcut harvest blocks and minimal riparian-area protection) on stream-runoff regimes. However, this study will still not fully assess the likely hydrologic effects of current management practices on the

Myren-4

Over the years unknown to the pubic for it was a heavily guarded secret that erosion was occurring on Staney Creek due to short term increases in low stream flows and these erosion processes were accelerated elsewhere when ever cutting occurred immediately after clearing of Old Growth forest. A paper trail in the EISs can be followed back to how the Forest Service was concerned about setting limits to the amount of cutting over a fixed period of time. Does the Forest Service really believe that its public will not observe that it has moved the yard line in the middle of the game! As a matter of documenting the reality of Louis Bartos original work on short term streamflow increases following logging may be drawn from the H. J. Andrews Experimental Forest WA#1 by observing that the evapotranspiration decrease and hence streamflow increase is given in Table 2 of Hicks et al.

My purpose here was not to demonstrate the universality of Bartos work but to show that it was scientifically sound from a different approach and that it bas significant utility in management decisions for both southeast Alaska coastal rainforest and the inland more arid Andrews Experimental Forest WA#1. Both watersheds operate under the same physical and biological laws and share similar hydrology in many respects.

I will leave the Risk analysis to others to evaluate. I am not sure that no matter how well it is done much less logging in the drainage areas of fish producing streams would solve the risk problem. Years ago we were assured by Forest Service hydrologists that rain on snow events were extremely rare and hence posed little to no threat and now IRWA cites the possibility several times.

Myren-5

A general comment on whether logging is near away from a stream, e.g., p 7 of Watershed Analysis for Luck Lake Project Area (WALP) for Coffman Creek. In terms of water volumes it does not matter. After the short term increase in flows occur the long term flows decreases in flows begin. When that water volume goes up into the atmosphere it does not flow down the creek. The same can said for Chum Creek, (p.10), and Luke Creek, p.12.

I have repeated before but I will say it more bluntly now that this paper of Paustain (1987) is a fraud and the statement on page 80 of the Indian River Watershed Analysis that the last sentence of,

Myren-3

> . . . **Existing Conditions.** Sediment yield data using intensive storm even sampling was collected between 1977 and 1981 at the middle Indian River stream gage site. These data cover a period approximately two years before and a two year period during and immediately following in initial timber harvest entry into the watershed. Refer to Paustain (1987) for a detailed discussion of this study. Annual suspended sediments yields at the middle Indian River stream gage ranged from 475 tons (430,913 kg) to 1,103 tons (1,000,625 kg), with the highest yield occurring in 1979 before logging activities in the upper portion of the watershed. There was no significant difference between sediment/streamflow relationships from the pre-logging and post-logging periods (Paustain 1987)."

is not true. If the reader does not want to wade through my criticism (attached to the my draft EIS of the IRWA), just find a competent statistician and ask him or her if one should test hypothesis for difference in two levels of a variable (in this case suspended sediment) without first freeing the variable from a third variable streamflow that is correlated to the levels of sediment being tested. However, the Paustain paper shows the effect of differences in streamflow between the two periods for a difference in amount of suspended sediment between the two periods was not controlled prior to testing.

File__basal3.wpd
May 3, 1999

7

Response to Richard Myren

Tongass that incorporate extensive riparian buffers throughout a watershed and reduced clearcut harvest acreage. We are in process of completing an agreement with USGS to complete a detailed statistical analysis for the Staney Creek stream-gauging data and report on measurable trends in hydrologic condition.

Myren-5 Pages 7, 10, and 12 of the Watershed Analysis are referring to riparian harvest and its relationship to fish, not to streamflow.

Endnotes

1. Bormann, F. H., and G.E. Likens. 1979. *Patten and Process in a Forested Ecosystem: Disturbance, Development and the Steady State based on the Hubbard Brook Ecosystem Study.* Sprinter-Verlag. N.Y. 253 pp.

2. From the Sierra Club TLMP Appeal, see ROD April 13, 1999, #97-13-00-0102-A217.

3. Sitka Ranger District and Chatham Area Supervisor's Office, Forest Service, Chatham Area, Tongass National Forest. 166 pp. plus appendices.

4. Myren, R.T. and R.J. Ellis, 1984. *Evapotranspiration in forest succession and long-term effects upon fishery resources: A consideration for management of old-growth forests.* In Meehan, Merrell, and Hanley, Eds. Proceedings of a Symposium Sponsored by Alaska District, American Institute of Fishery Research Biologists, Northwest Section, The Wildlife Society, Alaska Council on Science and Technology. Held in Juneau Alaska 12-15, April 1982. 425p. p. 183-186.

5. Directive from Bill McLeese, USDA Timber Management Washington D. C. dated February 2, 1994 to appellants of the 18 page appeal finding for the Central Prince of Wales Project signed by Chief Jack Ward Thomas.

6. Bishop, D.M. 1987. *The effect of logging in Gunnuk Creek watershed upon water yield.* Prepared for the Sealaska Corporation. January 27, 1987. 18 p.

Bishop makes text book assumptions about evapotranspiration and compute a water budget over 60 years and concluded that a decreased in streamflow begins to occur about 30 years after cutting and drops to its lowest level and stabilizes at about 60 years. He does not compute the eventual rise in the flows after 60 years as an old growth type of forest is established.

7. Sedell, J.R. and F.J. Swanson. 1984. *Ecological characteristics of streams in old-growth forestsof the Pacific Northwest. In* Proceedings, fish and wildlife relationships in old-growth forest symposium. American Institute of Fishery Research Biologists, Ashville, N.C. 425p. p 9-16.

8. Directive from Bill McLeese, USDA Timber Management Washington D. C. dated February 2, 1994 to appellants of the 18 page appeal finding for the Central Prince of Wales Project signed by Chief Jack Ward Thomas.

Attachment

The definitions of water volumes employed Sierra Club
and Forest Service TLMP Appeal 1999.

The Description in the Literature and Nomenclature of "Various Levels of Water Volumes".

A-water volume levels have been known as " discharges before logging," Bartos (1989), "historical hydrological characteristics" (*in* Ecosystem Guide for Watershed Analysis, Ecosystem Analysis at the Watershed Scale 1995, p.19)(Attachment #A), or "reference levels" (*in* A Framework for Analyzing the Hydrologic Condition of Watersheds, FS and BLM, Feb 1997, Version 3.1 p. 22) (Attachment #A), or "baseline" (*in* Hicks *et al.* (1991)[1] (Attachment #A) or flows from "pristine watersheds" (*in* Aho, Implementation of AFHA Direction)[2](Attachment #A);

b-water volume levels are known as "after logging discharges" Bartos (1989)[3] (Attachment #A), known as for example streamflows in the "Period of Increased Water Yield during and Immediately following logging," (*in* Hicks *et al.* (1991))

c-water volume levels are known, as for example, the flows which occur in the "Period of Reduced Water Yield following Vegetative Regrowth," (*in* Hicks *et al.* (1991), or by Kittridge (1948)[4] by age of stand of 40 years after cutting in his description (p.242), or decreased flows of the Aggradation Phase, following a short period of increased flows, of about 80 years duration after clear cutting on the Hubbard Brook Experimental Forest, NH, p.48 (*in* Bormann, F .H. and Likens, G.E. (1979).[5]

1. Hicks, B.J., Beschta, R.L., and R.D Harr. (1991). *Long-term changes in streamflow following logging in western Oregon and associated fisheries implications*. Water Res. Bull. 27(2):217-226.

2. FS correspondence from Dick Aho to A. Kimball, June 14, 1996.

3. Bartos, L. 1989. *A new look at low flows after logging*. Proceedings of Watershed '89: A Conference on the Stewardship of Soil, Air and Water Resources. Juneau, Alaska, March 21 through 23, 1989. Forest Service, Alaska region. P. 95-98.

4. Kittridge, J. 1948. *Forest Influences: The effects of woody vegetation on climate, water and soil, with applications to the conservation of water and control of floods and erosion*. McGraw -Hill, New York, NY. 394 pp.

5. Bormann, F. H. and G. E. Likens. 1979. *Pattern and Process in a Forested Ecosystem: Disturbance, Development, and the Steady State based on the Hubbard Brook Ecosystem Study*. Springer-Verlag, New York, NY. 415 pp.

Please return this form to:

Thorne Bay Ranger District
Attn: Luck Lake IDT
P.O. Box 19001
Thorne Bay, AK 99919

Questions? or
Need additional information?
Call Tom Ford, Team Leader, at:
(907) 828-3210 or 828-3304

Comment Deadline: May 3, 1999

LUCK LAKE DRAFT EIS
Comments

NAME: Mike Shafer ADDRESS: P.O Box 19512
PHONE: 828-3990 Thorne Bay, AK
DATE: 4-14-99 99919

COMMENTS:

Shafer-1 I support the preferred alternative three, if only because of the fact that this alternative has the lowest logging cost of the various alternatives.

Sincerely
Mike Shafer

Luck Doc No 234
File Desig D4b

Response to Mike Shafer

Shafer-1 We have noted your comments and recommendations.

Luck Doc No 181
File Desig D3c

Subsistence Testimony

Luck Lake Draft EIS ANILCA 810 Subsistence Hearing

Coffman Cove City Hall, Coffman Cove, Alaska
12 April 1999, 7-8 pm

INTRODUCTION:

Tom Ford, Acting District Ranger/Project Leader

Good evening. This is a Public Hearing, as provided by Section 810 of ANILCA, to receive subsistence testimony on the alternatives proposed in the Luck Lake Draft Environmental Impact Statement. My name is Tom Ford, and I have been designated by the Forest Service as the Hearing Officer for this proceeding. With me tonight are Cheri Ford of the Forest Service, Cass Klee, GIS Coordinator on the project, and Chris Minnillo. I want to thank all of you for coming. The intent of this Subsistence Hearing is to make an official record of your testimony. We appreciate your interest and effort to be here and want to assure you that we will do our part to listen and record your comments.

For the record, today is April 12th and the time is 7 o'clock. This Hearing is being held in Coffman Cove, Alaska at the Coffman Cove City Hall. Public notification of this Hearing was made by publication in the *Ketchikan Daily News* and other papers [the *Island News* and the *Wrangell Sentinel*], and by notices posted on the community bulletin board at City Hall and at the Riggin' Shack.

There are some procedures I would like to mention. This Hearing is scheduled to run until 8 o'clock. However, we want to give everyone the opportunity to testify, so, if testimony runs beyond that time, we will continue until everyone that wishes to speak has had the opportunity to do so. If testimony is completed earlier, we will keep the record open until 8 o'clock to allow opportunity for additional comments. If you have not already done so, please sign in at the door and indicate if you wish to present testimony. When you do come up for testimony , please state your name and spell it for the record. This along with your address or phone number on the sign in sheet will allow us to contact you if we need to clarify something in your testimony as we develop Final EIS for the project.

With that introduction, I am now opening the Hearing and we are ready for the first testimony.

TESTIMONY:

Ron Hull

This is Ron Hull. I've been a resident of Coffman Cove for 12 years and, uh, I'd like to say about the Luck Lake EIS, uh, on the access, uh, management plan, um, I feel it, uh, it closes too many roads to sustain our quality of life we currently choose to live and enjoy. Um, I think that the, the management , access management plan will have a major impact on that.

And, uh, on the old-growth reserves, I uh, I feel they're too big. Would prefer to see areas suitable for timber harvest taken out of those blocks designated, uh, old-growth, uh, uh reserves, and, uh, replaced, uh, with areas equal with old-growth potential that are less suitable for, for, uh, er, I should say feasible for timber sale. Um, thus, what I'm trying to say is I'd like to see more acres, uh, in, uh, we've roughly got 700,000 and some acres of, of uh, in uh, in the Tongass that are, uh, designated for timber harvest and every, every acre we can hang on to means alot when you've got all the, the visuals, the thousand-foot buffers, estuaries, karst, you know, it goes on and on and on. Uh, it's uh, I feel it's very important that we, we keep all the acres, uh, that are feasible for timber harvest open for and still protect the things, uh, you know I, I realize there's a need to protect certain things also.

Transcribed from tapes of meeting by
Cleta A. Hills

Um, last, but not least, I, uh, I'm in favor of alternative 3, uh, due mostly to current market conditions. Uh, I think it's the most feasible. Most of 'em will probably, they have the most, most, greatest chance, I feel, of, uh, of uh selling, uh, taking place, I should say. If somebody may, might be able to make a profit on them, they, has the least cost to the Forest Service, um, if market conditions were better, however, uh, I would rather see something with, uh, Alternative 4 or 6. Uh, I just don't feel it's probably feasible at this time. Uh, that's about all I think I have to say on it. *(Recorder: "Please spell your name.")* My, uh, spelling of my name is Ron Hull, R-O-N H-U-L-L.

Jerry Kilanowski

Yeah, I'm Jerry Kilanowski, K-I-L-A-N-O-W-S-K-I, resident of Coffman for 13 years, maybe longer. And, uh, here speaking about Luck Lake Project. Uh, first off, I'd like to say, you know, I, I, I think Alternative 3 is probably the best, uh, economic alternative to do. Though, again, I would, I would like them to not go strictly by the, their drawings on a map if there's a possibility of accessing more timber than what's shown there. That they should do it to to increase the, uh, economic value of, of the, of the sale.

Um, um, in-between on my feelings on road closures. On some areas, I wouldn't mind seeing them closed. Other areas, I don't think there's a need to. I think, uh, we like our roads to recreate on here. Whether it's hunting, fishing, berry picking, whatever. And that's, you know, the, just the community of Coffman alone, never mind the additional use of, that you get by, uh, non-residents. They also like to come and hunt and fish and berry pick et cetera, et cetera on the roads. So, I think there's, there's too many roads being closed off on this. I don't have a, a preference for one road or the other, but I think they'd, that too many of them are getting closed. You know, if there's a real reason for fish or wildlife, I'm not opposed to some roads being closed. I won't pick numbers or anything because I haven't gone that in-depth in it. Um, on some of 'em, though, if they do close them, I think, uh, any silvicultural prescriptions that need to be done in there, thinning or, or whatnot, should be done first, before the roads are closed. And, uh, if there's a potential of locking up timber, even though it's not listed as retention or this or that, it, it winds up being retention. So, you know, if, if we're gonna lock up that timber, then trade the acres somewhere else where they, their, it's listed as wildlife retention or whatnot. That, you know, OK, now you've locked up 500 acres up Baird Peak that won't get into. Well, that 500 acres should be wildlife retention and open it up somewhere else where they do have it, have it still. That's my feelings on that.

And, uh, on Eagle Creek Bridge, personally, you know, if they, I don't, I don't want to see gates at all, anywhere. If they close the road, they closed the road with a water bar and pullin' pipes, that's fine. I don't want to see gates. I'd prefer the bridge to be kept in, so that way you could have access to both sides of the creek for fishing purposes. Rather than pullin' everybody to one side of it. You know, whether that means a walk-on bridge, or, or closing the road after the bridge, again closing it with a, a tank-trap's fine if you're gonna close it, but I'd like to see the bridge open. Stay in, anyway. That's my comments.

James Geiser

OK, I'm, uh, James Geiser, and, uh, I guess I'm a new resident here at Coffman. I've been here six months now. I'm from, uh, Healy, Alaska and I, before I came to this area (I came here because I had friends), they gave me a map and it was put out by the US Department of Agriculture, Forest Service, Alaska Region. It's leaflet number 180. 1984. And it states, I quote, "as you travel the roads, you may have already noticed the pits in the hillsides adjacent to the road. These are rock quarries. Rocks from these quarries are used to form the road bed upon which you are driving. Feel free to camp in those quarries, if you desire, so long as the quarry is not in use. While the quarry. While in the quarry, look closely at some of the exposed rocks. You may be able to see fossils of plants and animals that have lived here up to 450 million years ago." Now that's

one of the things that really drew me to this area. Cause you had access to the gravel pits, and you could go up these roads and look in these pits and look at the rocks. I'm a prospector by trade. And I see here, in this issue number 5, in the summary, that there are in the Luck Lake project, there are 19.6 miles of road currently open that they want to close. Well, I'm against closing any of the roads, unless they present a danger to, to you know, travellers or, or people. I, I just don't understand why they'd want to close them. And that's all I really wanted to say, cause I really appreciate the use of these roads and being able to go in and explore these quarries. And I also like fishing as well. *(Recorder: "Please spell your name.")* It's G-E-I-S-E-R.

Pat McDonald

My name's Pat McDonald, P-A-T M-C-D-O-N-A-L-D. Coffman Cove. I'm gonna use the 330 road, which, uh, as an example of a road that I'm opposed to closing. It has a bridge on it. Uh, the reason for closing it (the only reason I could find) is we, it was not safe for public travel because of the guards on it. I realize it might be a temporary bridge, but if there's a possibility to make it safe by adding some rails, I would prefer that. I see it, uh, impacting hunting and fishing and trapping and prospecting and a good drinking water source. Those are some of the things that concern me on any of the road closures.

Also, there are some things I don't understand in the Impact Statement. I, I need to know, I need to have it defined, what are Cultural Resources, because that's the reason for closing alot of these roads.

Also, another thing that bothers me is the, uh, under wildlife concerns. Uh, wa, I don't understand, what does "close to road density" mean, or what does "close site specific" mean as a reason for closing a road. I've not seen any evidence of wildlife declines in 10 years. If anything, I've seen an increase. I'm concerned with who, how, and when biologists did their studies showing adverse impact on wildlife. Uh, I want to see some real facts before, uh, I think any decisions ought to be made about closing any of our roads. I want to know who did it and when. Um, alot of times I think biologists are out there at the wrong time. It's hard to find a wolf in the middle of the summer, but you can find lots of them in the winter. That's just one example.

I'm not in favor of closing any roads on the Coffman Cove to Naukati junction. I notice that there's alot of roads they want to close, uh, that are right close there to camp. Alot of these are the wildlife concerns. I don't think they're justifiable. The only one I can see that's justifiable is protecting our municipal watershed. Um, I would like to see that closed. Maybe left in to walk-in only for hunting, but, uh, I don't have a problem with that being closed. Thank you.

Ken Page

My name's Ken Page, P-A-G-E. I've been a resident of Coffman Cove for approximately 13 years. And I'd really hate to see any of our road system closed around here. The logging industry is, is being choked out. Cert. There are other means of living here as far as cedar salvage. And cedar salvage consists of all old units that you can, of course, salvage cedar out of. And shutting off all the roads would, would stop that completely. And on the subsistence end of it, I've, uh, I hunt and fish here and that's part of my living. And closing off the roads would be a big part of that. On the other hand, I've got a small business here, and, that is in the tourism, and for the tourism you need the roads open to get to the access of different creeks and small lakes. And, that's it.

Mel Jensen

My name's Mel Jensen, J-E-N-S-E-N. I live in Coffman Cove, Alaska. I've been here for about three years. And I'm against the road closures that's proposed. Um, not for just subsistence, but for, just the free-use available to all Americans. Not just us, of Coffman Cove. Could be anyone. But I'm just against your closures. Thank you.

Frank Wetherbee

Uh, Frank Wetherbee, W-E-T-H-E-R-B-E-E. Uh, I'd just like to say that I'm against the road closures. I think that it should be left to nature, and, if, uh, I think the roads wash out, or a bridge washes out, er, er something like that, er a slide, I think they should be left and, uh, let nature close the roads. And, I feel that if the Forest Service steps in and closes our roads in this are, it's gonna impact our subsistence hunting and fishing. Drastically. It'll, it'll put, uh, uh heavy traffic in the areas that people can use and impact them too much. And I, I just feel that it's the wrong thing to do in this area. Thank you very much.

Bill Fitzpatrick

Hi, I'm Bill Fitzpatrick, F-I-T-Z-P-A-T-R-I-C-K. And, I don't agree with the road closing, road closures. One is the access to salvage. Forest Service has been saying right along that they want to, uh, help those involved in the timber industry and closing the roads as you'll lose, uh, cedar salvage. There's alot of possibilities for green sheet sales. That's 50 thousand feet and under to private individuals without goin' through the contract end of the sale. And there's the free use timber. It'll lose access to that. An' then, far as food source for us that live around here, 's hunting, fishing, there's berries, there's mushrooms, there's, if ya, there's all kinds of things out in the woods. An' closing the roads - that's less access to that.

An' then, Forest Service seems to be worried about maintaining 'em, so, I say, let the roads close naturally. If there's a problem with the roads, as far as the watershed, an', an' slides and whatnot, then solve that problem with that particular road. And then, as far as maintaining 'em, well, the, they want to pay to close the roads and they're talkin' about they want to keep us locally employed, well, they could employ us to maintain the roads. So, I'm against the road closure. Thank you very much.

Larry Clark

Hello, my name's Larry Clark, L-A-R-R-Y C-L-A-R-K. I live in Coffman Cove. And, uh, my response to the proposed road closures around the Coffman area. An', I'm against this, because the reduction of the timber harvest in communities on Prince of Wales Island. Most of the communities are turnin' to recreational businesses for their livelihood. By closing all the proposed roads, this will have the same impact on the recreation industry as the lack of timber volume has had on the timber industry.

And, uh, then as far as alternatives that are proposed for loggin', I would have to go with Alternative 3 because o' the economics. The only problem I have with that is the large percentage of crown cover that is being prescribed in these units. And, uh, it's always been a problem in the past. An', I don't see that this is gonna' be any different. So, thank you.

John Rodriguez

Alright, my name's John Rodriguez. That's, uh, R-O-D-R-I-G-U-E-Z. And, um, I'm totally against the roads bein' closed. Um, my concern is if you're gonna close a certain amount of roads, an' the roads that are open are gonna get, uh, a tremendous amount of, uh, traffic. They're gonna get a tremendous amount, uh, impact on the free use wood. Um, alot of people move up here to Alaska - they don't have alot of money. The winter's are hard. Um, they don't have the equipment to go, um, haul out a bunch of wood, so the stuff that's close to the road's kinda nice. Um, I'm just, I'm concerned about, uh, I don't agree with the decline of, uh, the wildlife. I think, I think, uh, there's a few things managed wrong, but that's not part of it. But, I'm just against the roads bein' closed. Thank you.

CLOSING:

Tom Ford, Acting District Ranger/Project Leader
OK, if no others wish to give testimony at this time, it is now 8 o'clock, and I am closing the hearing.

LUCK LAKE DRAFT EIS

Comments

NAME: Johnathan V. Rodriguez
ADDRESS: Po Box 19015 coffman cove Ak 99918
PHONE: 1-907-329-2009
DATE: 4-12-99

COMMENTS: "Subsestance statement!"

I am against the Road closure in the coffman cove Area

Ive Lived here For 11 years, and I think that we should let the Roads close naturally. I Feel if leave only a small amount of Roads open. Than the Road that are left open over Run with traffic and the wild life will be dramatically Impacted, and it will increase with years to come.

LuckDoc No 235
File Desig D3c

Luck Doc No 183
File Desig D3c

Subsistence Testimony

Luck Lake Draft EIS Subsistence Hearing

Bay Chalet, Thorne Bay, Alaska
14 April 1999, 7-7:30 pm

INTRODUCTION:

Tom Ford, Acting District Ranger/Project Leader

Good evening. This is a Public Hearing, as provided by Section 810 of ANILCA, to receive subsistence testimony on the alternative propo...alternatives proposed in the Luck Lake Draft Environmental Impact Statement. My name is Tom Ford. I have with me tonight Chris Minnillo and Robert Wetherell of the Forest Service, from Thorne Bay, and I have been designated by the Forest Service as a Hearing Officer for this proceeding. I want to thank all of you for coming. The intent of this Subsistence Hearing is to make an official record of your testimony. We appreciate your interest and effort to be here and want to assure you that we will do our part to listen to and record your comments.

For the record, today is April 14th and the time is 7:00 pm. This Hearing is being held in Thorne Bay, Alaska at the Bay Chalet. Public notification of this Hearing was made by publication in the *Island News*, the *Ketchikan Daily News* and other newspapers [the *Wrangell Sentinel*], and by notices posted at the Thorne Bay Ranger District, uh, Thorne Bay City Hall, and Riptide Liquor. And the Post Office at Thorne Bay and the Thorne Bay Market.

There are some procedures I would like to mention. This Hearing is scheduled to run until 7:30. However, we want to give everyone the opportunity to testify, so, if testimony runs beyond that time, we will continue until everyone that wishes to speak has had the opportunity to do so. If you have not already done so, please sign in at the door and indicate if you wish to present testimony. When you do come up for testimony , please state your name and spell it for the record. This along with your address or phone number on the sign in sheet will allow us to contact you if we need to clarify something in your testimony as we develop Final EIS for the project.

With that introduction, I am now opening the Hearing and we are ready for the first testimony.

TESTIMONY:

Jim Beard

My name is Jim Beard, B-E-A-R-D. I live in Thorne Bay. And, what I'd like to say is that, uh, prior to large scale timber harvesting, the Luck Lake project area had a habitat capability of 1,061 deer. At present time, the capability is 633 deer, approximately a 40 percent decline in deer habitat. With the addition of cutting in this project, it'll add another two to six percent, based on the alternative. I feel that, with the increase in population of humans on the island over, over recent time, that there's been a decrease in deer population due to hunting pressure with this increase in human population. I believe that the current deer population cannot support the current take limit of four deer per person in, uh, Game Management Unit 2. I feel that it's further exacerbated by the, uh, by allowing the taking of a doe in, uh, Game Management Unit 2 via the subsistence issue. I realize at this point in time, the Alaska Department of Fish and Game is responsible for management of game populations. However, shortly, it is very likely that this may now fall into federal hands an', and possibly the Forest Service management. Therefore, based on this, I feel that the, uh, Forest Service needs to take a look, or Federal agencies need to take a look at, uh, reducing the take limit on deer to approximately two per, two per person at this point in time. I feel that we need to eliminate, uh, entirely, the doe take aspect of this in subsistence.

Transcribed from tapes of meeting by [signature]

Furthermore, I feel that we need to look at, one, closing roads that are, that currently exceed the, uh, mile per square mile road density recommendation which currently is 1.2 miles per square mile in the project area. And I feel that we need to close this down to less than 0.7 miles per square mile. Also, I feel that, uh, further that closing, uh, further roads in the Luck Lake project area to eliminate, uh, poaching and illegal take of deer. Thank you for the opportunity to comment.

CLOSING:

Tom Ford, Acting District Ranger/Project Leader

If no others wish to give testimony at this time, it is now 7:30, and I am closing the hearing.

☆ U.S. GOVERNMENT PRINTING OFFICE: 2000 — 589-116 / 10024 Region No. 10

Tongass NF - Thorne Bay RD
Attn: Luck Lake IDT
USDA Forest Service
P.O. Box 19001
Thorne Bay, AK 99901